Chapter 15 Preapproved Wall Appendix: Specific Requirements and Details for Reinforced Earth (RECO) Concrete Panel Walls

In addition to the general design requirements provided in **Appendix 15-A**, the following specific requirements apply to the design of the Reinforced Earth™ concrete 5 ft x 5 ft panel faced retaining wall:

No HITEC evaluation report is currently available for this wall system. Design procedures for specific elements of the wall system have been provided to WSDOT in a binder dated March 29, 2004. The design procedures used by RECO are based on the AASHTO Standard Specifications for Highway Bridges (**2002**). Internal stability is based on the use of the Coherent Gravity method per the other widely used and accepted methods clause in the AASHTO Standard Specifications. The Coherent Gravity Method should yield similar results to the AASHTO Simplified Method for this wall system. Interim approval is given for the continued use of the AASHTO Standard Specifications and the Coherent Gravity Method as the basis for design. Note the connector between the wall face panels and the soil reinforcement strips shall be designed to have adequate life considering corrosion loss as illustrated in the March 29, 2004 binder provided to WSDOT by RECO.

Reinforcement pullout shall be calculated based on the default values for steel grid reinforcement provided in the AASHTO Specifications. If, at some future time product and soil specific pullout data is provided to support use of non-default pullout interaction coefficients, it should be noted that LRFD pullout resistance design using these product and soil specific interaction coefficients has not been calibrated using product specific data statistics and reliability theory. Therefore, the specified resistance factors in the GDM and AASHTO LRFD Specifications should not be considered applicable to product specific pullout interaction coefficients.

Approved details for the Reinforced Earth™ concrete 5 ft x 5 ft panel faced retaining wall system are provided in the following plan sheets. Exceptions and additional requirements regarding these approved details are as follows:

- Several plan sheets were submitted that detail panels with dimensions other than 5 ft by 5 ft. The cruciform shaped panels are also considered preapproved for use in WSDOT projects. However, unless otherwise shown in the contract, it should always be assumed that the 5 ft x 5 ft panels are intended for WSDOT projects. Other panel sizes may be used by special design (e.g., full height panels), with the approval of the State Bridge Design Engineer and the State Geotechnical Engineer, provided a complete wall design with detailed plans are developed and included in the construction contract (i.e., walls with larger facing panels shall not be submitted as shop drawings in design-bid-build projects).
- Where filter cloth or geotextile fabric is shown, WSDOT reserves the right to require the use WSDOT Standard Specification materials as specified in Standard Specification Section 9-33 that are similar to those specified in this plan sheet.

Where steel strips are skewed to avoid a backfill obstruction, the maximum skew angle shall be 15 degrees.

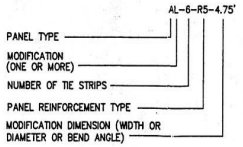
The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175

STANDARD PRECAST PANEL SHOP DRAWINGS – SQUARE PANELS

PANEL GENERAL NOTES

NOTES:

1. REINFORCEMENT SHOWN SHALL COMPLY TO THE ASTM A615, GRADE 60 REBAR LAYOUT WILL BE DETAILED AND SHOWN ON PANEL SHOP DRAWINGS.
2. 1/2" x 1/2" CHAMFER SHALL BE PROVIDED ON ALL EXPOSED EDGES (FRONT FACE ONLY).
3. ALL PANEL TYPES AND OTHER RELATED ELEMENTS WILL BE DETAILED ON SHOP DRAWINGS.
4. PANEL DESIGN STRUCTURAL THICKNESS IS 5 1/2" MINIMUM, THIS THICKNESS MUST INCREASE TO ACCOMMODATE ANY ARCHITECTURAL SCULPTURED FINISH.
5. ACTUAL LOCATION OF REBARS WILL BE ADJUSTED TO ACCOMMODATE PANEL CASTING.
6. PANEL REINFORCEMENT SHALL BE PLACED WITH A MINIMUM 1 3/16" CLEARANCE FROM THE TIE STRIPS. IF MESH REINFORCEMENT IS USED, THE TIE STRIP LOCATION SHALL BE ADJUSTED TO PROVIDE THE MINIMUM REQUIRED CLEARANCE OF 1 3/16".
7. CONCRETE FOR PANELS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH AFTER 28 DAYS OF 4000 p.s.i.
8. TIE STRIPS SHALL BE STEEL ASTM A570 GRADE 50 (GALVANIZED PER ASTM A-123).
9. VERTICAL REINFORCING BARS SHALL BE PLACED 2" MIN. CLEAR FROM THE BACK FACE OF THE PANEL.
10. ALL REINFORCING BARS SHALL BE STOPPED 2" CLEAR FROM ANY EDGE OF PANEL UNLESS NOTED ON INDIVIDUAL FABRICATION DRAWING.
11. ALL INDIVIDUAL FABRICATION DRAWINGS ARE SHOWN BACK FACE.
12. IN THE CASE OF CUT PANELS AND PANELS WITH HOLES, ADDITIONAL REINFORCEMENT SHOWN ON THE SHOP DRAWINGS SHALL BE PROVIDED ALONG WITH THE MESH REINFORCEMENT.
13. ALL PANELS SHALL HAVE TWO 1-TON LIFTING INSERTS, EXCEPT FOR M AND N PANELS. THE M AND N PANELS SHALL HAVE TWO 2-TON ERECTION HEAD ANCHORS WITH 2-TON SHEAR BARS.



The design contained on these drawings is based on information provided by the owner. On the basis of this information, The Reinforced Earth Company has designed, and is responsible for the internal stability of the structure only. External stability, including foundation (bearing capacity and settlement) and slope stability (sliding and rotation), is the responsibility of the owner.

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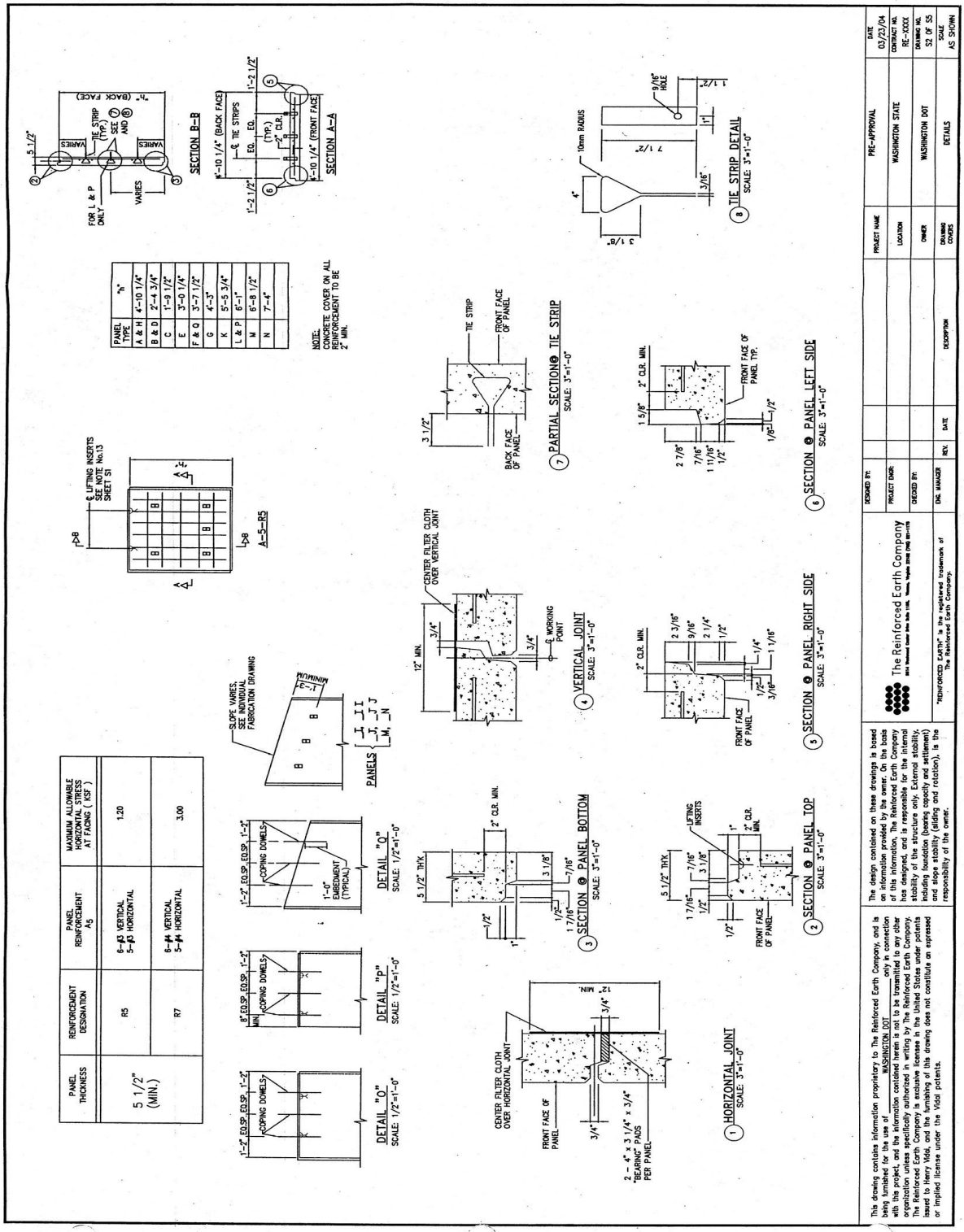
DESIGNED BY:				PROJECT NAME	PRE-APPROVAL	DATE 03/23/04
PROJECT ENGR:				LOCATION	WASHINGTON STATE	CONTRACT NO. RE-XXXX
CHECKED BY:				OWNER	WASHINGTON DOT	DRAWING NO. S1 OF S5
ENG. MANAGER	REV.	DATE	DESCRIPTION	DRAWING COVERS	GENERAL NOTES	SCALE AS SHOWN

Appendix 15 (RECO Concrete)


PANEL THICKNESS
REINFORCEMENT DESIGNATION
PANEL REINFORCEMENT As
MAXIMUM ALLOWABLE HORIZONTAL STRESS AT FACING (KSF)
5 1/2" (MIN.)
R5
6-#3 VERTICAL 5-#3 HORIZONTAL
1.20
R7
6-#4 VERTICAL 5-#4 HORIZONTAL
3.00
PANEL TYPE
'h'
A & H 4'-10 1/4"
B & D 2'-4 3/4"
C 1'-9 1/2"
E 3'-0 1/4"
F & Q 3'-7 1/2"
G 4'-3"
K 5'-5 3/4"
L & P 6'-1"
M 6'-8 1/2"
N 7'-4"
NOTE: CONCRETE COVER ON ALL REINFORCEMENT TO BE 2" MIN.
SECTION B-B
SECTION A-A
DETAIL "O"
DETAIL "P"
HORIZONTAL JOINT
SECTION ❶ PANEL TOP
SECTION ❷ PANEL RIGHT SIDE
SECTION ❸ PANEL BOTTOM
VERTICAL JOINT
SECTION ❹ PANEL LEFT SIDE
PARTIAL SECTION ❺ TIE STRIP
TIE STRIP DETAIL
PANELS
SLOPE VARIES, SEE INDIVIDUAL FABRICATION DRAWING
LIFTING INSERTS SEE NOTE No.13 SHEET S1
CENTER FILTER CLOTH OVER HORIZONTAL JOINT
CENTER FILTER CLOTH OVER VERTICAL JOINT
2 - 4" x 3 1/4" x 3/4" "BEARING" PADS PER PANEL
COPING DOWELS
EMBEDMENT (TYPICAL)
TIE STRIPS SEE NOTE 7 AND 8
FOR L & P ONLY
VARIES
10mm RADIUS
9/16" HOLE
The Reinforced Earth Company
DESIGNED BY:
PROJECT ENGR:
CHECKED BY:
ENG. MANAGER
REV.
DATE
DESCRIPTION
PROJECT NAME
LOCATION
OWNER
DRAWING COVERS
PRE-APPROVAL
WASHINGTON STATE
WASHINGTON DOT
DETAILS
DATE 03/23/04
CONTRACT NO. RE-XXXX
DRAWING NO. S2 OF S5
SCALE AS SHOWN
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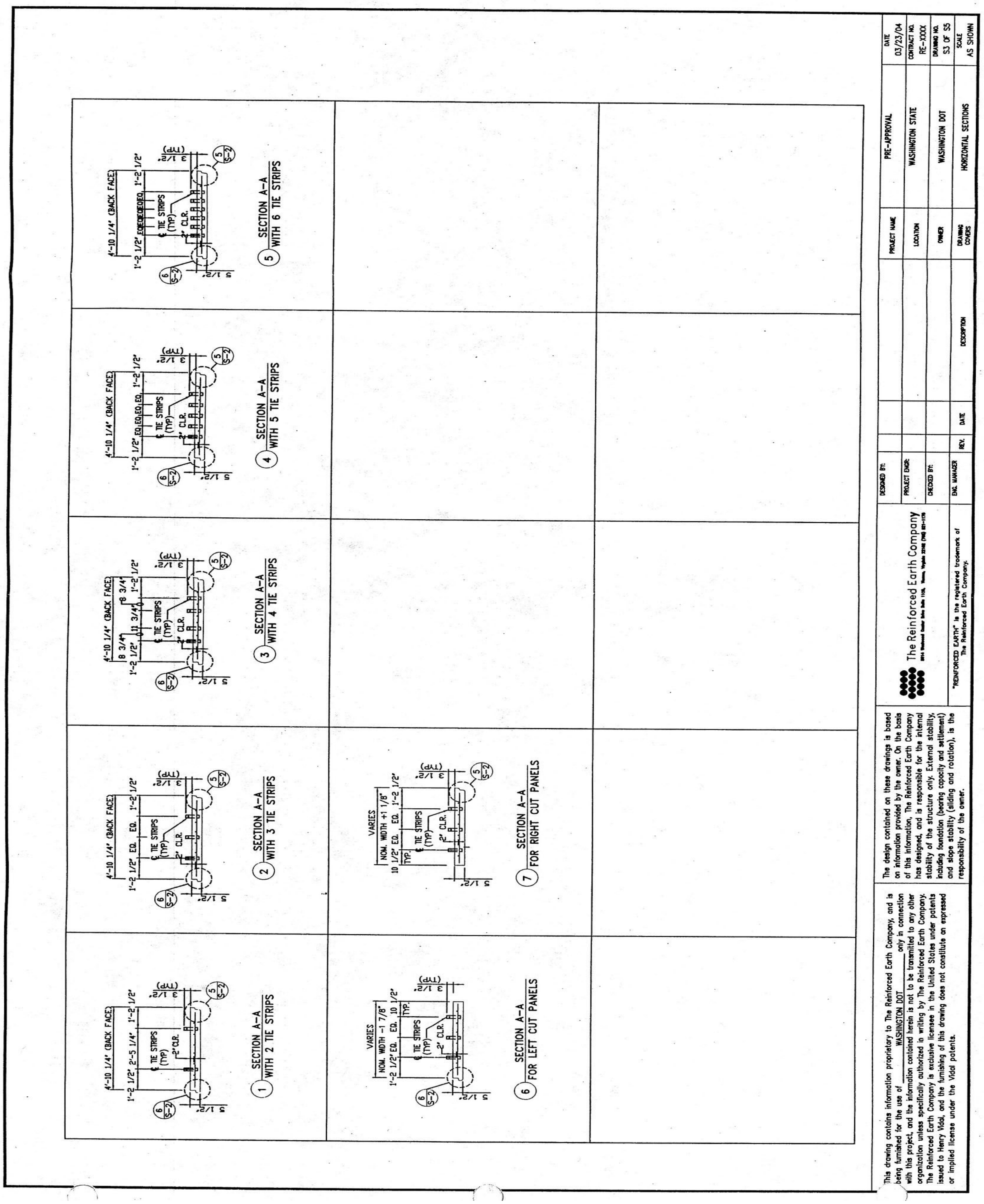
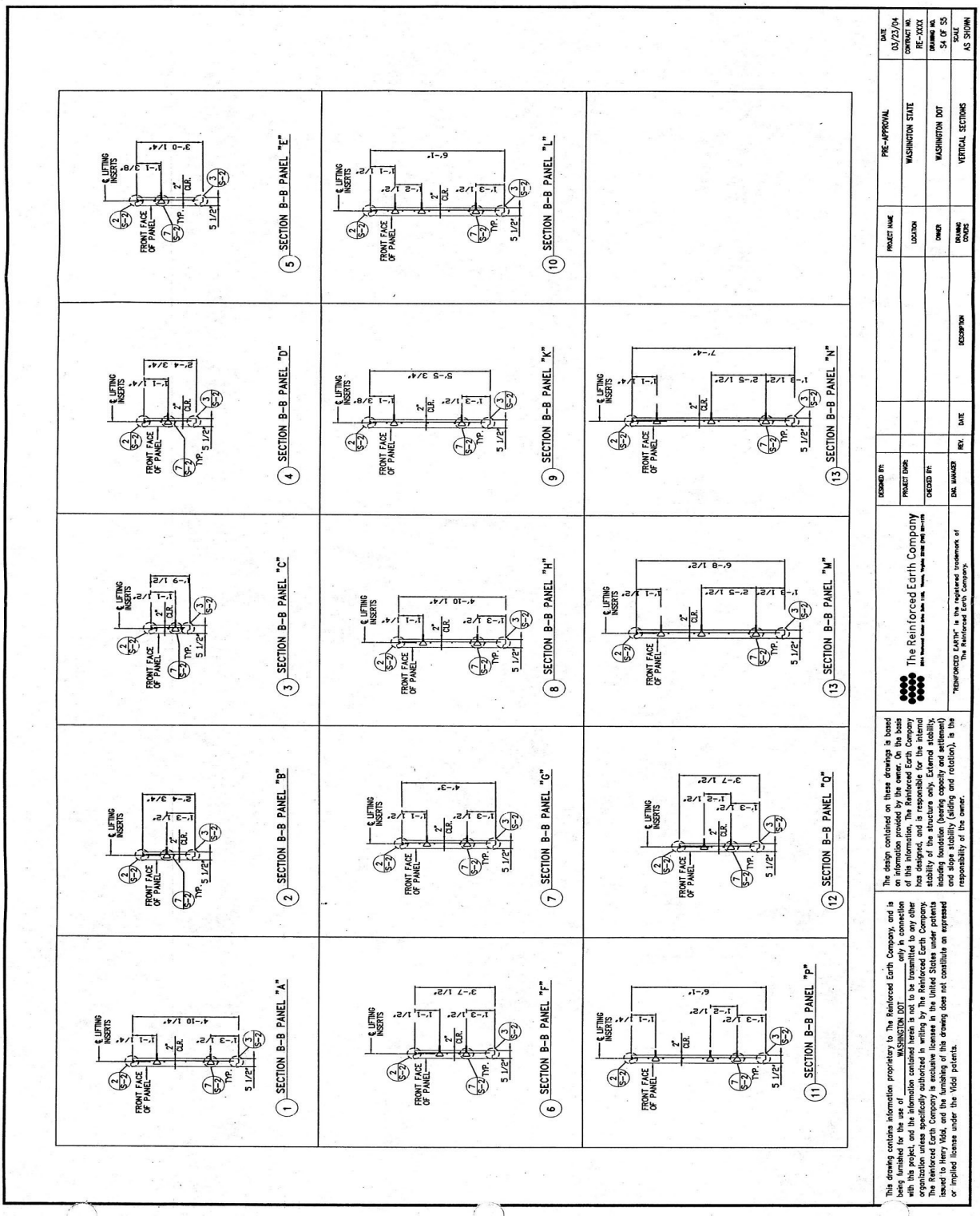
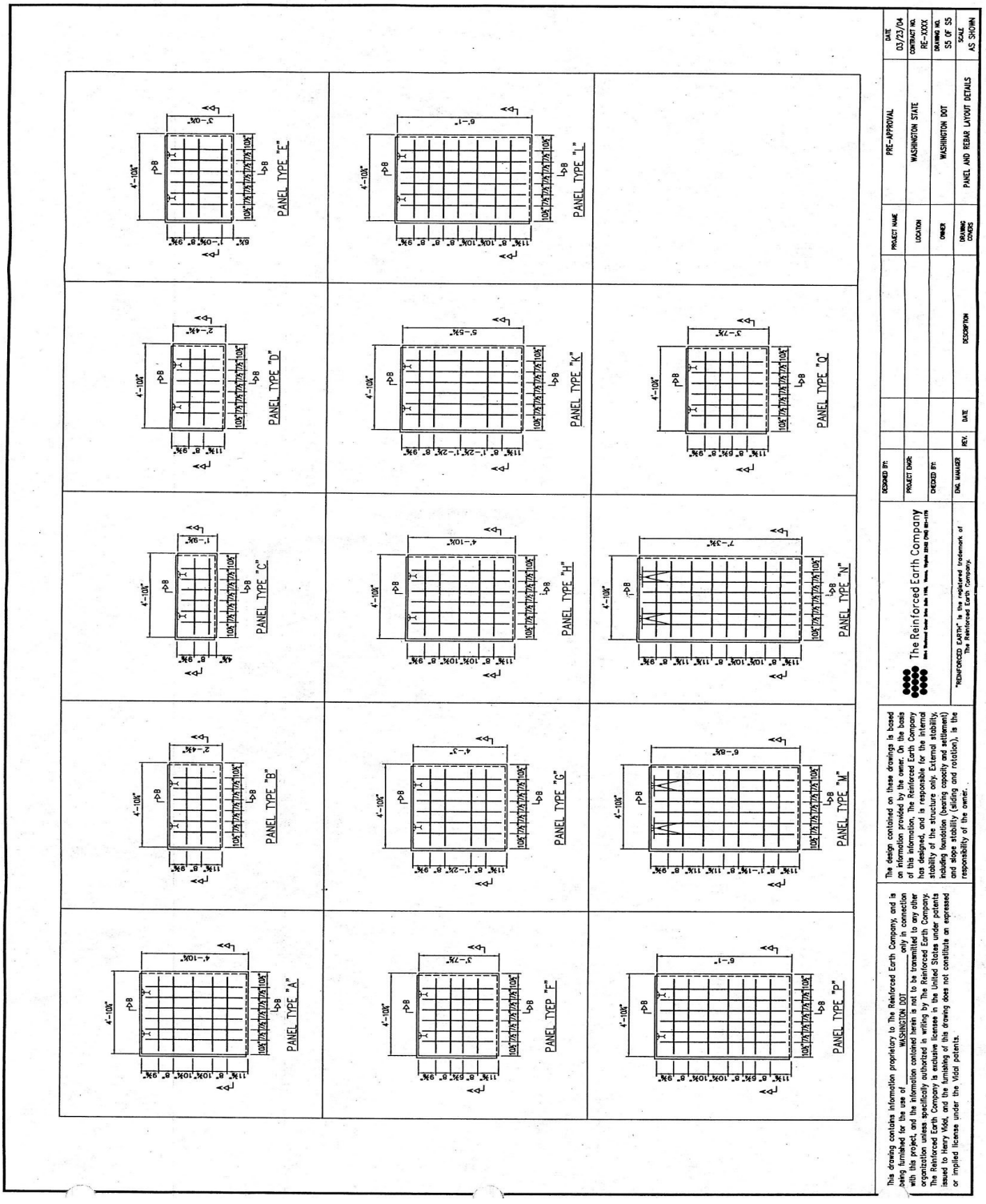

SECTION A-A WITH 2 TIE STRIPS
SECTION A-A WITH 3 TIE STRIPS
SECTION A-A WITH 4 TIE STRIPS
SECTION A-A WITH 5 TIE STRIPS
SECTION A-A WITH 6 TIE STRIPS
SECTION A-A FOR LEFT CUT PANELS
SECTION A-A FOR RIGHT CUT PANELS
4'-10 1/4" (BACK FACE)
VARIES
The Reinforced Earth Company
PRE-APPROVAL
WASHINGTON STATE
WASHINGTON DOT
HORIZONTAL SECTIONS
03/23/04
RE-XXXX
S3 OF S5
AS SHOWN


SECTION B–B PANEL "A"
SECTION B–B PANEL "B"
SECTION B–B PANEL "C"
SECTION B–B PANEL "D"
SECTION B–B PANEL "E"
SECTION B–B PANEL "F"
SECTION B–B PANEL "G"
SECTION B–B PANEL "H"
SECTION B–B PANEL "K"
SECTION B–B PANEL "L"
SECTION B–B PANEL "M"
SECTION B–B PANEL "N"
SECTION B–B PANEL "P"
SECTION B–B PANEL "Q"
FRONT FACE OF PANEL
TYP.
CLR.
LIFTING INSERTS
The Reinforced Earth Company
PRE-APPROVAL
WASHINGTON STATE
WASHINGTON DOT
VERTICAL SECTIONS
RE-XXXX
54 OF 55
AS SHOWN
03/23/04


PANEL TYPE "A"
PANEL TYPE "B"
PANEL TYPE "C"
PANEL TYPE "D"
PANEL TYPE "E"
PANEL TYPEP "F"
PANEL TYPE "G"
PANEL TYPE "H"
PANEL TYPE "K"
PANEL TYPE "L"
PANEL TYPE "M"
PANEL TYPE "N"
PANEL TYPE "P"
PANEL TYPE "Q"
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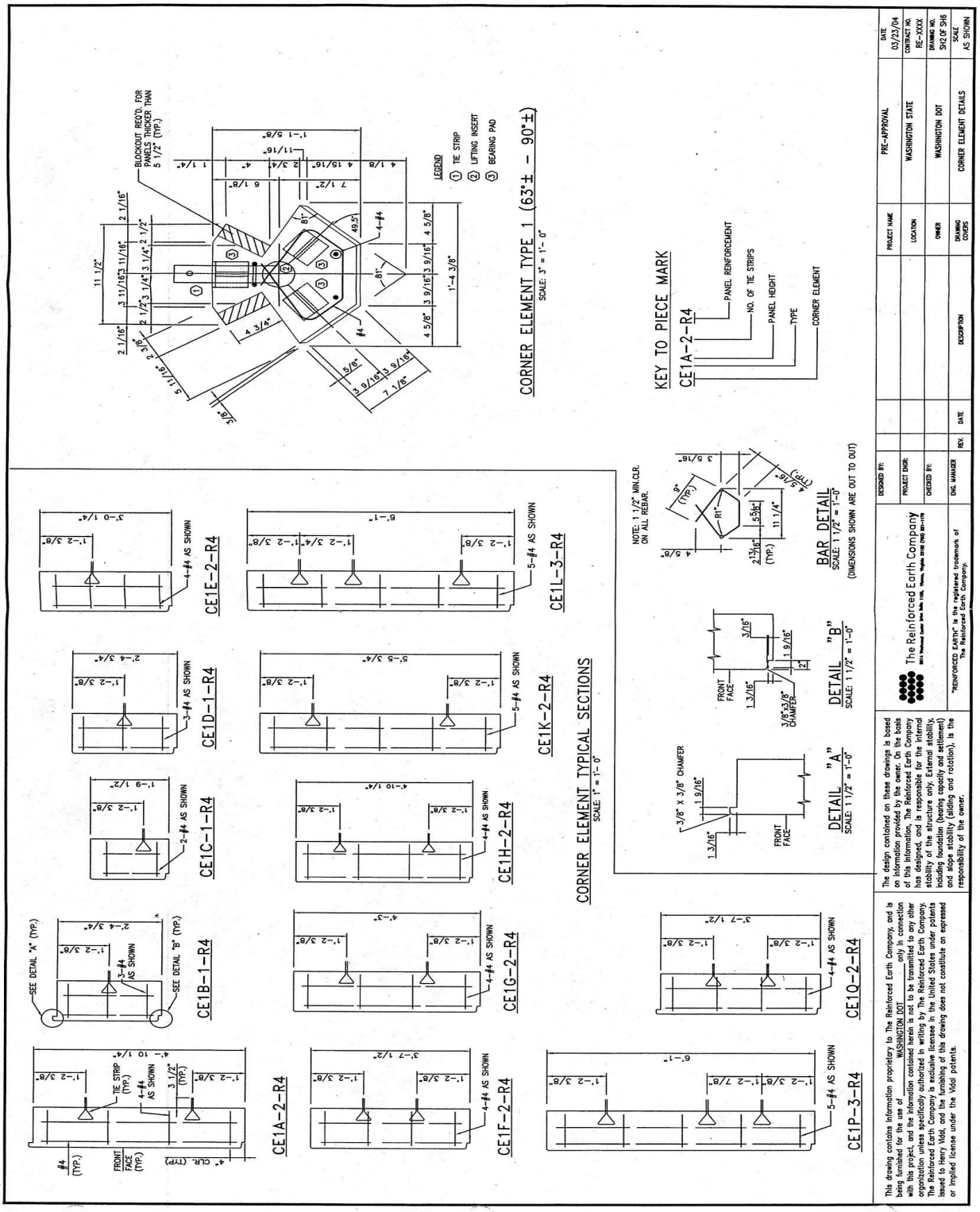
PANEL AND REBAR LAYOUT DETAILS
AS SHOWN


CORNER ELEMENT TYPE 1 (63°± - 90°±)
SCALE: 3" = 1'- 0"
KEY TO PIECE MARK
CE1A-2-R4
PANEL REINFORCEMENT
NO. OF TIE STRIPS
PANEL HEIGHT
TYPE
CORNER ELEMENT
LEGEND
① TIE STRIP
② LIFTING INSERT
③ BEARING PAD
BLOCKOUT REQ'D. FOR PANELS THICKER THAN 5 1/2" (TYP.)
CORNER ELEMENT TYPICAL SECTIONS
SCALE: 1" = 1'- 0"
CE1A-2-R4
CE1B-1-R4
CE1C-1-R4
CE1D-1-R4
CE1E-2-R4
CE1F-2-R4
CE1G-2-R4
CE1H-2-R4
CE1K-2-R4
CE1L-3-R4
CE1P-3-R4
CE1Q-2-R4
NOTE: 1 1/2" MIN.CLR. ON ALL REBAR.
BAR DETAIL
SCALE: 1 1/2" = 1'-0"
(DIMENSIONS SHOWN ARE OUT TO OUT)
DETAIL "A"
SCALE: 1 1/2" = 1'-0"
DETAIL "B"
SCALE: 1 1/2" = 1'-0"
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DESIGNED BY:
PROJECT ENGR:
CHECKED BY:
ENG. MANAGER
REV.
DATE
DESCRIPTION
PROJECT NAME
LOCATION
OWNER
DRAWING DESIGNS
PRE-APPROVAL
WASHINGTON STATE
WASHINGTON DOT
CORNER ELEMENT DETAILS
DATE
03/23/04
CONTRACT NO.
RE-XXXX
DRAWING NO.
SH.2 OF SH.6
SCALE
AS SHOWN
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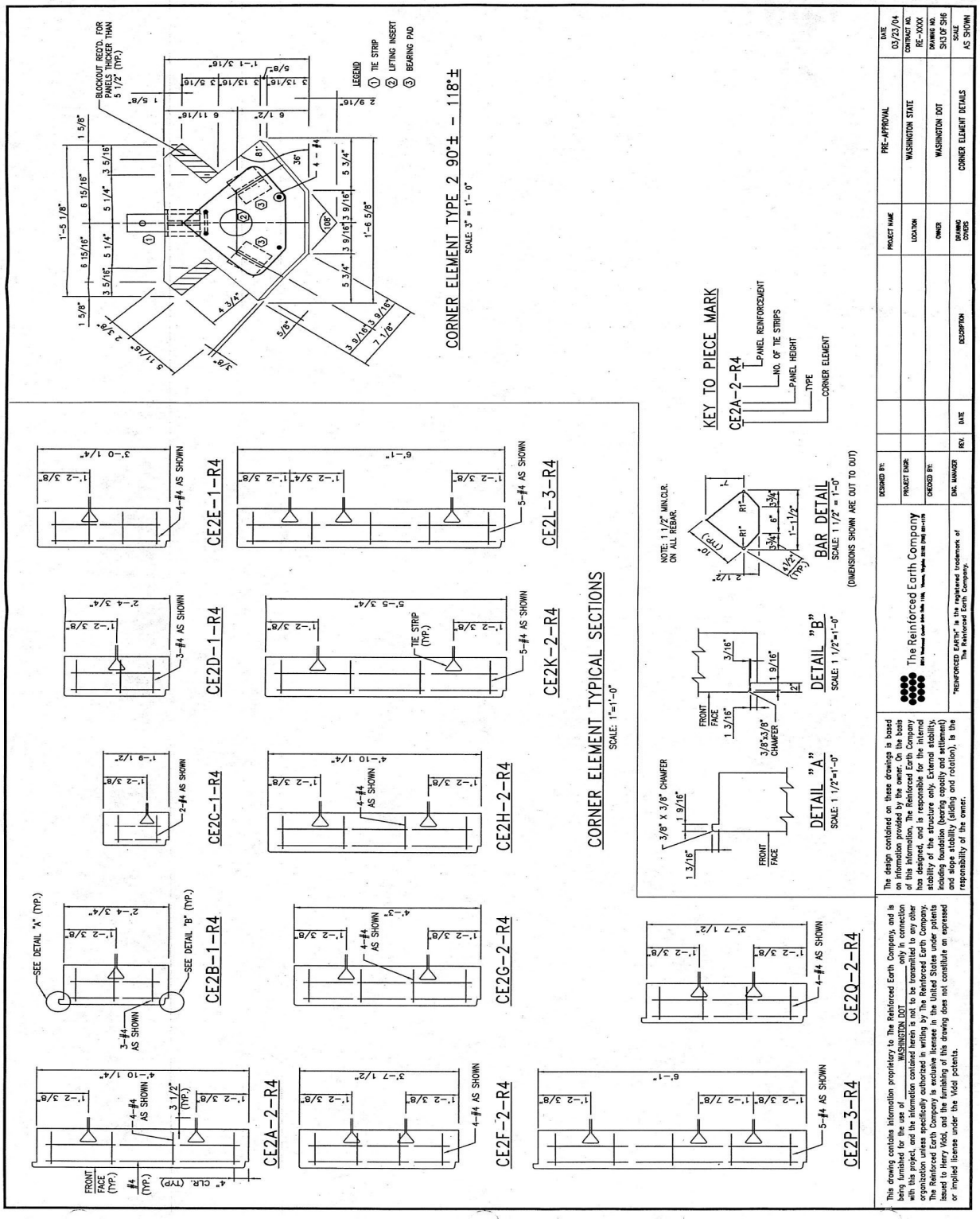
CORNER ELEMENT TYPE 2 90°± - 118°±
SCALE: 3" = 1'- 0"
LEGEND
① TIE STRIP
② LIFTING INSERT
③ BEARING PAD
BLOCKOUT REQ'D. FOR PANELS HIGHER THAN 5 1/2" (TYP.)
KEY TO PIECE MARK
CE2A-2-R4
PANEL REINFORCEMENT
NO. OF TIE STRIPS
PANEL HEIGHT
TYPE
CORNER ELEMENT
CORNER ELEMENT TYPICAL SECTIONS
SCALE: 1"=1'-0"
CE2A-2-R4
CE2B-1-R4
CE2C-1-R4
CE2D-1-R4
CE2E-1-R4
CE2F-2-R4
CE2G-2-R4
CE2H-2-R4
CE2K-2-R4
CE2L-3-R4
CE2P-3-R4
CE2Q-2-R4
DETAIL "A"
SCALE: 1 1/2"=1'-0"
DETAIL "B"
SCALE: 1 1/2"=1'-0"
BAR DETAIL
SCALE: 1 1/2" = 1'-0"
(DIMENSIONS SHOWN ARE OUT TO OUT)
NOTE: 1 1/2" MIN.CLR. ON ALL REBAR.
DESIGNED BY:
PROJECT ENGR:
CHECKED BY:
ENG. MANAGER
REV.
DATE
DESCRIPTION
PROJECT NAME
LOCATION
OWNER
DRAWING COVERS
PRE-APPROVAL
WASHINGTON STATE
WASHINGTON DOT
CORNER ELEMENT DETAILS
DATE 03/23/04
CONTRACT NO. RE-XXXX
DRAWING NO. SH.3 OF SH6
SCALE AS SHOWN
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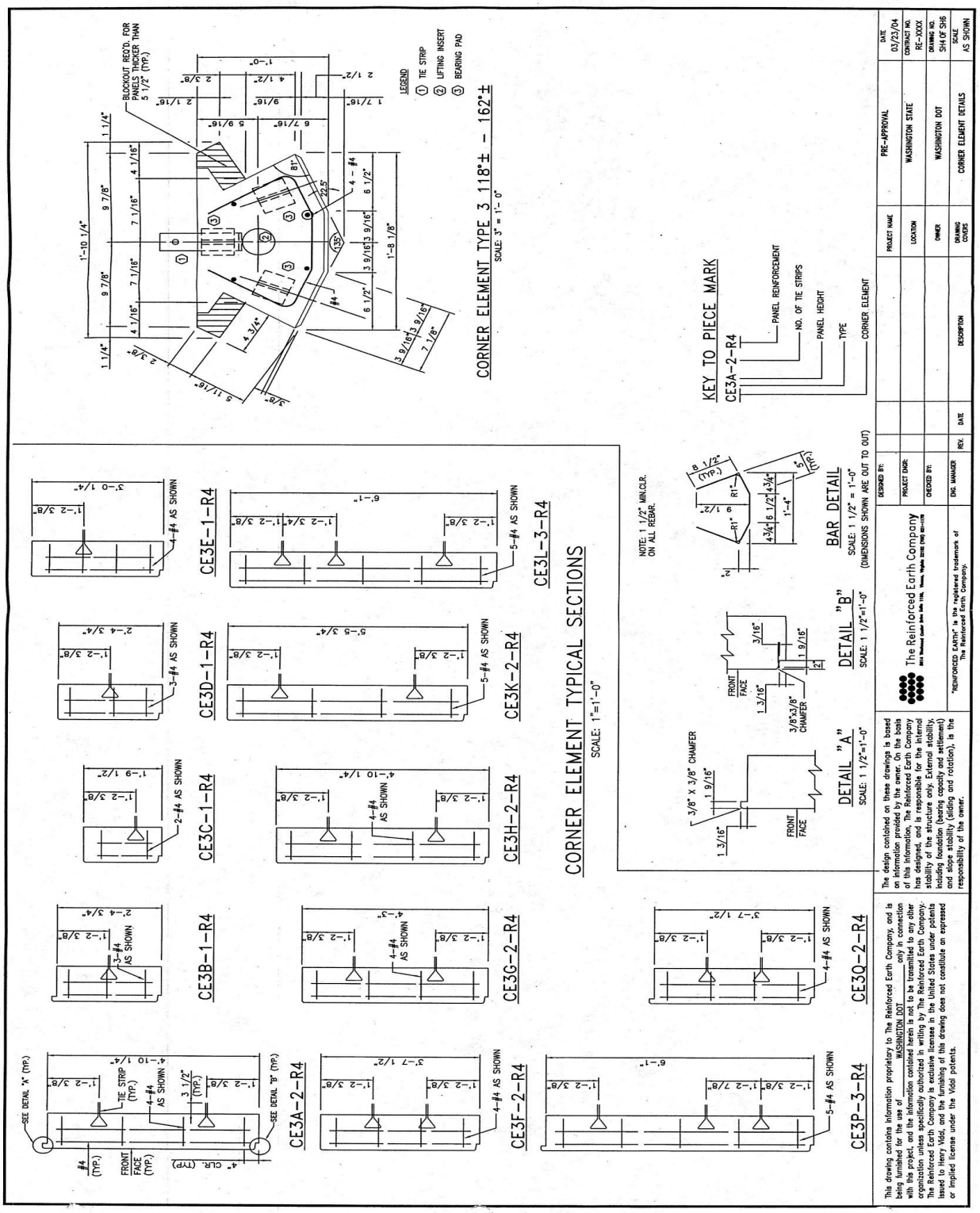
CORNER ELEMENT TYPICAL SECTIONS
SCALE: 1"=1'-0"
CE3A-2-R4
CE3B-1-R4
CE3C-1-R4
CE3D-1-R4
CE3E-1-R4
CE3L-3-R4
CE3K-2-R4
CE3H-2-R4
CE3G-2-R4
CE3Q-2-R4
CE3F-2-R4
CE3P-3-R4
DETAIL "A"
SCALE: 1 1/2"=1'-0"
DETAIL "B"
SCALE: 1 1/2"=1'-0"
BAR DETAIL
SCALE: 1 1/2" = 1'-0"
(DIMENSIONS SHOWN ARE OUT TO OUT)
NOTE: 1 1/2" MIN.CLR. ON ALL REBAR.
KEY TO PIECE MARK
CE3A-2-R4
PANEL REINFORCEMENT
NO. OF TIE STRIPS
PANEL HEIGHT
TYPE
CORNER ELEMENT
CORNER ELEMENT TYPE 3 118°± - 162°±
SCALE: 3" = 1'- 0"
LEGEND
1 TIE STRIP
2 LIFTING INSERT
3 BEARING PAD
BLOCKOUT REQ'D. FOR PANELS THICKER THAN 5 1/2" (TYP.)
The Reinforced Earth Company
"REINFORCED EARTH" is the registered trademark of The Reinforced Earth Company.
DESIGNED BY:
PROJECT ENGR:
CHECKED BY:
ENG. MANAGER
REV.
DATE
DESCRIPTION
PROJECT NAME
LOCATION
OWNER
DRAWING COVERS
PRE-APPROVAL
WASHINGTON STATE
WASHINGTON DOT
CORNER ELEMENT DETAILS
DATE 03/23/04
CONTRACT NO. RE-XXXX
DRAWING NO. SH14 OF SHS
SCALE AS SHOWN
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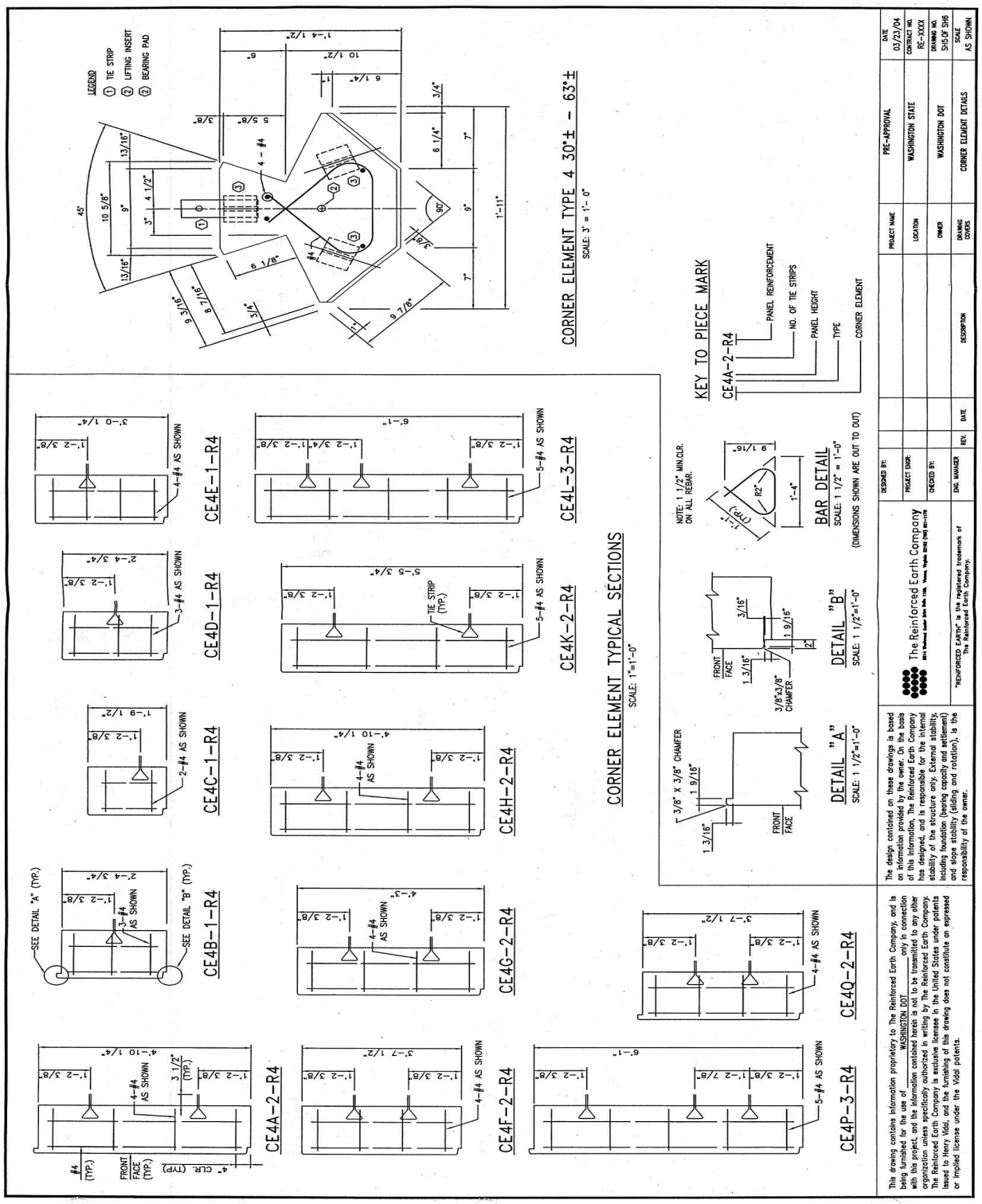
LEGEND
① TIE STRIP
② LIFTING INSERT
③ BEARING PAD
CORNER ELEMENT TYPE 4 30°± – 63°±
SCALE: 3" = 1'- 0"
KEY TO PIECE MARK
CE4A-2-R4
PANEL REINFORCEMENT
NO. OF TIE STRIPS
PANEL HEIGHT
TYPE
CORNER ELEMENT
CORNER ELEMENT TYPICAL SECTIONS
SCALE: 1"=1'-0"
CE4A-2-R4
CE4B-1-R4
CE4C-1-R4
CE4D-1-R4
CE4E-1-R4
CE4F-2-R4
CE4G-2-R4
CE4H-2-R4
CE4K-2-R4
CE4L-3-R4
CE4P-3-R4
CE4Q-2-R4
DETAIL "A"
SCALE: 1 1/2"=1'-0"
DETAIL "B"
SCALE: 1 1/2"=1'-0"
BAR DETAIL
SCALE: 1 1/2" = 1'-0"
(DIMENSIONS SHOWN ARE OUT TO OUT)
NOTE: 1 1/2" MIN.CLR. ON ALL REBAR.
The Reinforced Earth Company
DESIGNED BY:
PROJECT ENGR:
CHECKED BY:
ENG. MANAGER
REV.
DATE
DESCRIPTION
PROJECT NAME
LOCATION
OWNER
DRAWING CHECKED
PRE-APPROVAL
WASHINGTON STATE
WASHINGTON DOT
CORNER ELEMENT DETAILS
DATE: 03/23/04
CONTRACT NO. RE-XXXX
DRAWING NO. SHEET OF SHS
SCALE: AS SHOWN
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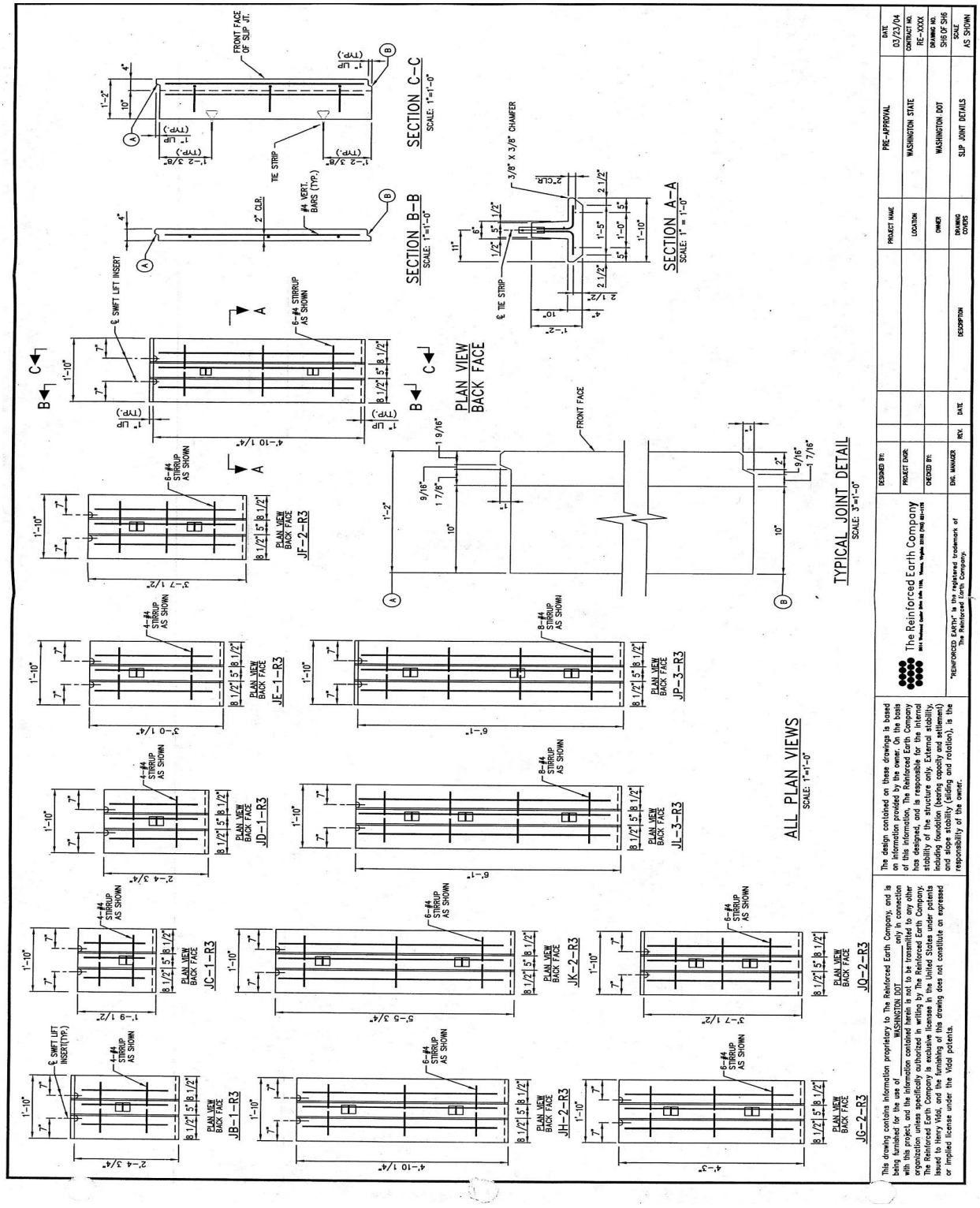
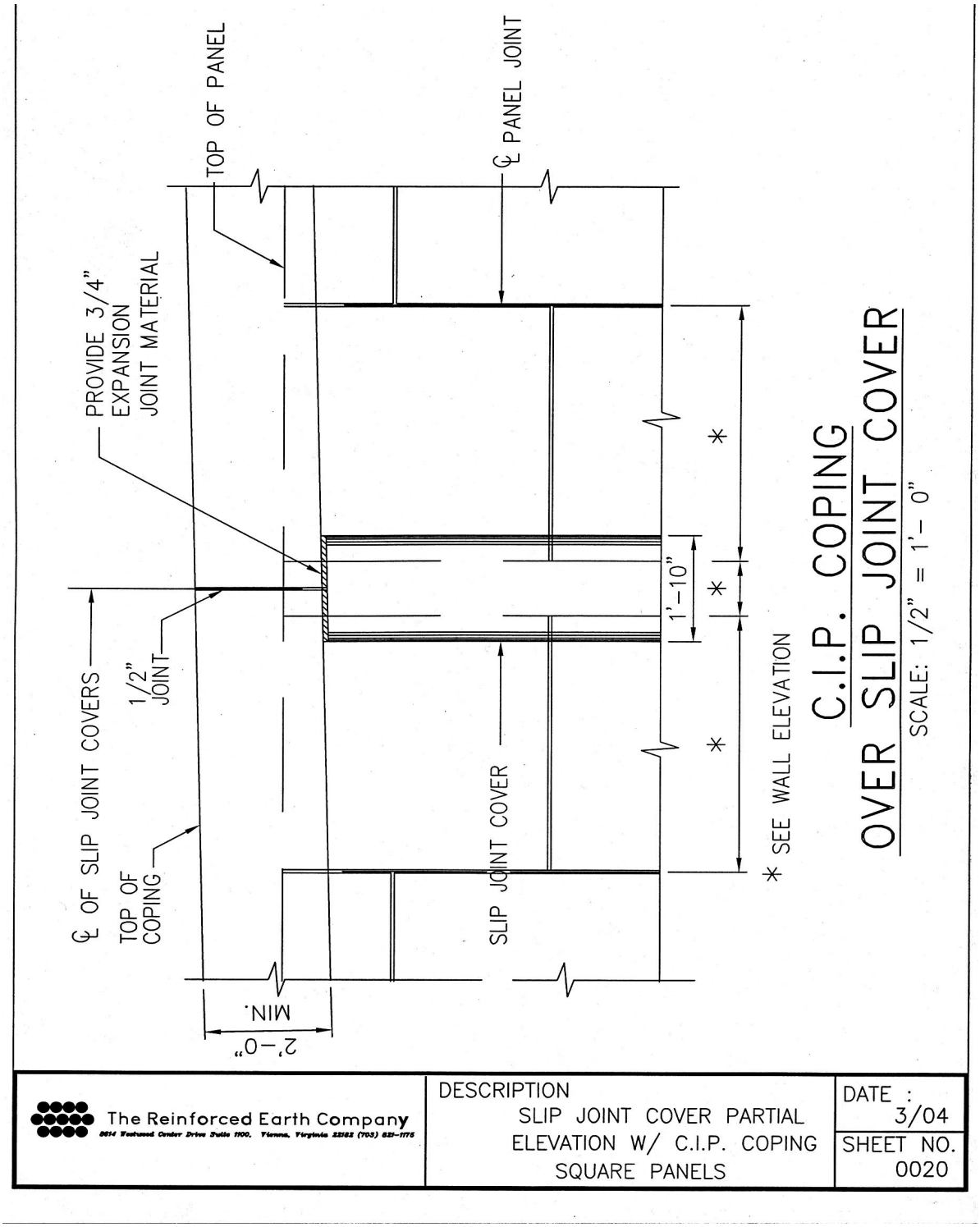
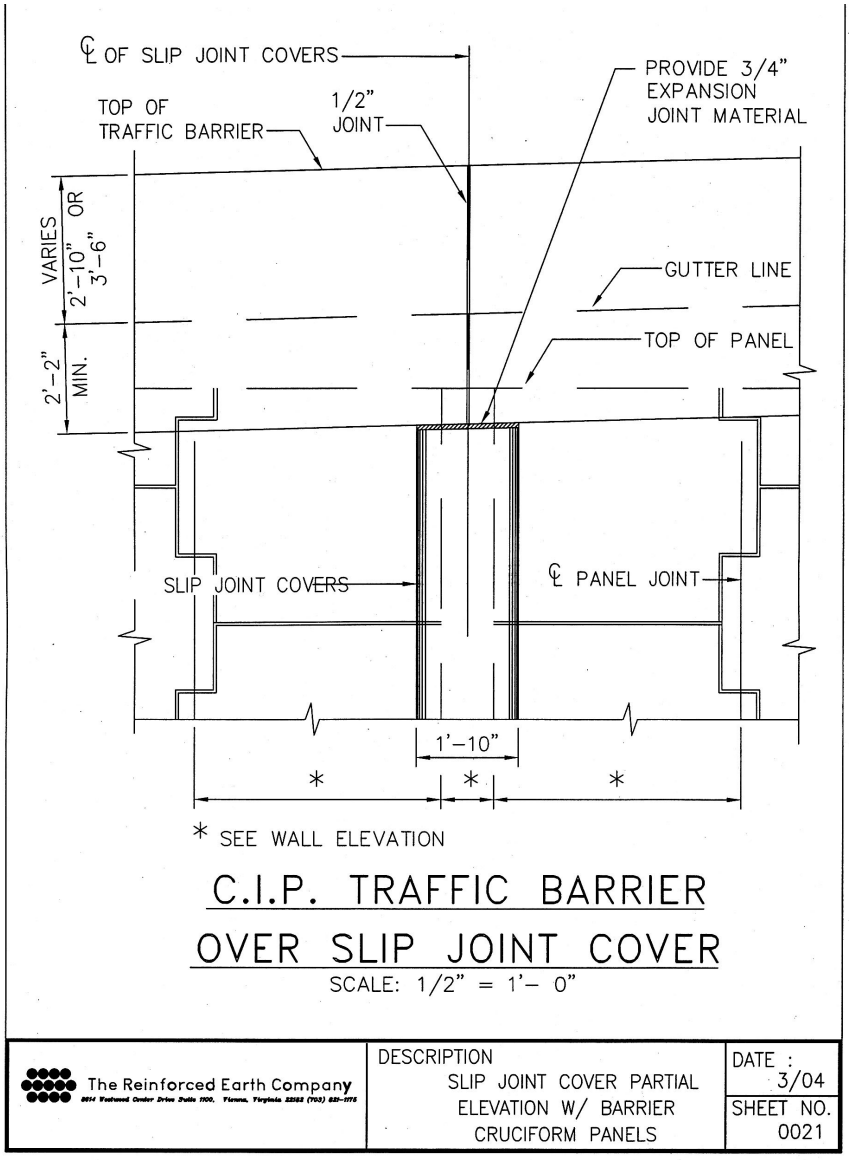

SECTION C–C
SCALE: 1"=1'-0"
SECTION B–B
SCALE: 1"=1'-0"
SECTION A–A
SCALE: 1" = 1'-0"
PLAN VIEW
BACK FACE
FRONT FACE
TYPICAL JOINT DETAIL
SCALE: 3"=1'-0"
ALL PLAN VIEWS
SCALE: 1"=1'-0"
JB–1–R3
JC–1–R3
JD–1–R3
JE–1–R3
JF–2–R3
JG–2–R3
JH–2–R3
JJ–2–R3
JK–2–R3
JL–3–R3
JP–3–R3
SWIFT LIFT INSERT
TIE STRIP
FRONT FACE OF SLIP JT.
3/8" X 3/8" CHAMFER
The Reinforced Earth Company
DESIGNED BY:
PROJECT ENGR.
CHECKED BY:
ENG. MANAGER
PROJECT NAME
LOCATION
OWNER
DRAWING COVERS
PRE-APPROVAL
WASHINGTON STATE
WASHINGTON DOT
SLIP JOINT DETAILS
DATE
03/23/04
CONTRACT NO.
RE-XXXX
DRAWING NO.
SHEET OF SHEETS
SHEET 6 OF SHEETS
SCALE
AS SHOWN

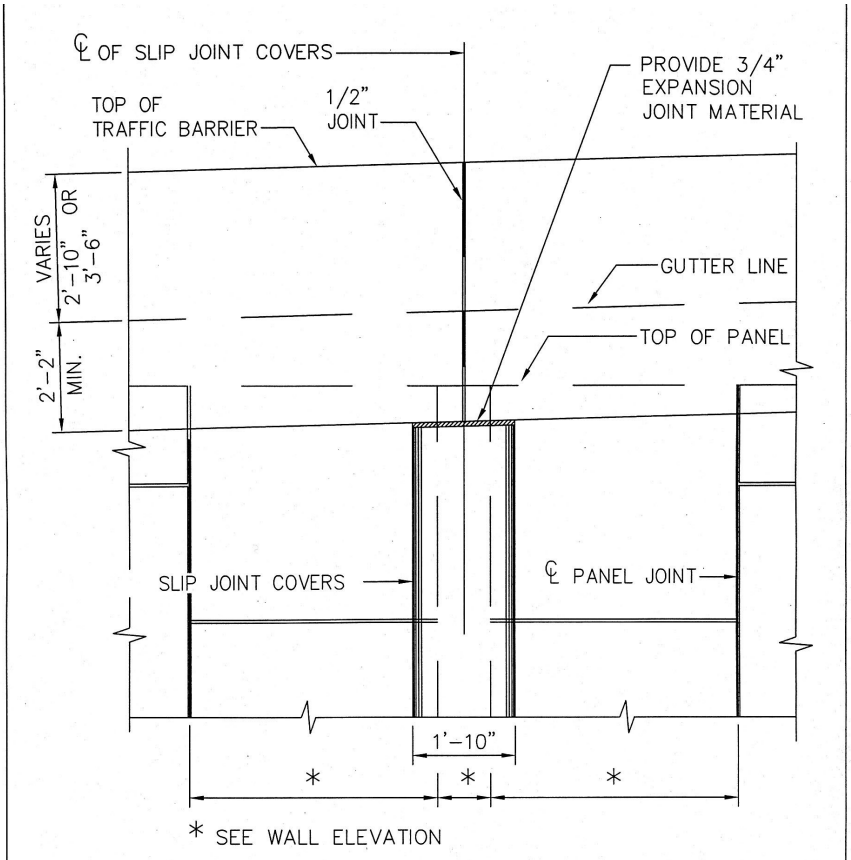

TOP OF PANEL
℄ PANEL JOINT
PROVIDE 3/4" EXPANSION JOINT MATERIAL
℄ OF SLIP JOINT COVERS
1/2" JOINT
TOP OF COPING
SLIP JOINT COVER
1'-10"
*
* SEE WALL ELEVATION
MIN.
2'-0"
C.I.P. COPING
OVER SLIP JOINT COVER
SCALE: 1/2" = 1'- 0"
The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175
DESCRIPTION
SLIP JOINT COVER PARTIAL ELEVATION W/ C.I.P. COPING SQUARE PANELS
DATE : 3/04
SHEET NO. 0020



C.I.P. TRAFFIC BARRIER OVER SLIP JOINT COVER

SCALE: 1/2" = 1'- 0"

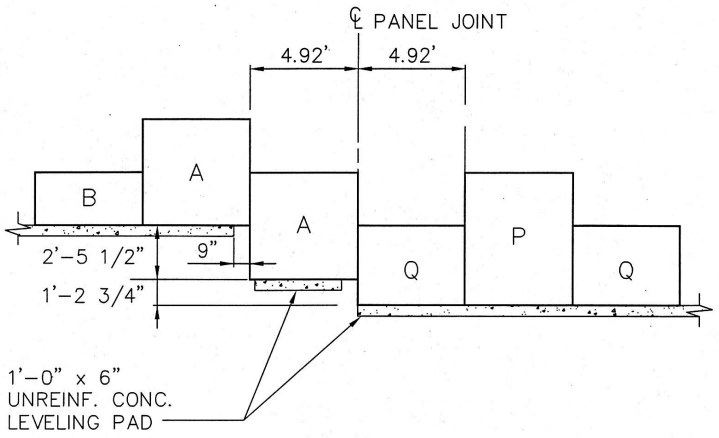
The Reinforced Earth Company 8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION SLIP JOINT COVER PARTIAL ELEVATION W/ BARRIER CRUCIFORM PANELS	DATE : 3/04 SHEET NO. 0021



C.I.P. TRAFFIC BARRIER OVER SLIP JOINT COVER

SCALE: 1/2" = 1'- 0"

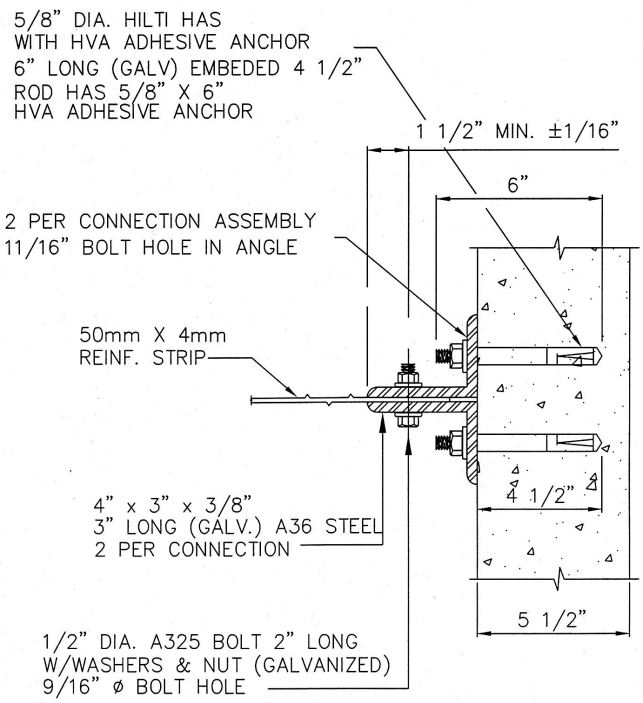
The Reinforced Earth Company 8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION SLIP JOINT COVER PARTIAL ELEVATION W/ BARRIER SQUARE PANELS	DATE : 3/04 SHEET NO. 0022



TYPICAL LEVELING PAD STEP DETAIL

NOT TO SCALE

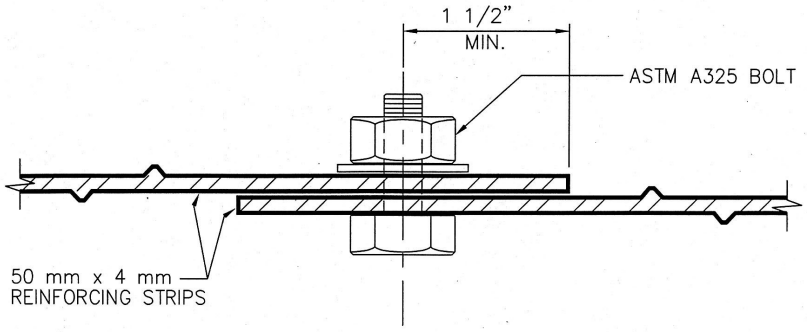
The Reinforced Earth Company	DESCRIPTION SQUARE PANELS – LEVELING PAD STEP DETAIL	DATE : 3/04 SHEET NO. 0024



CLIP ANGLE DETAIL

SCALE: 3" = 1'-0"

The Reinforced Earth Company 8614 Westwood Center Drive Suite 1700, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION CLIP ANGLE DETAIL	DATE : 3/04
		SHEET NO. 0025



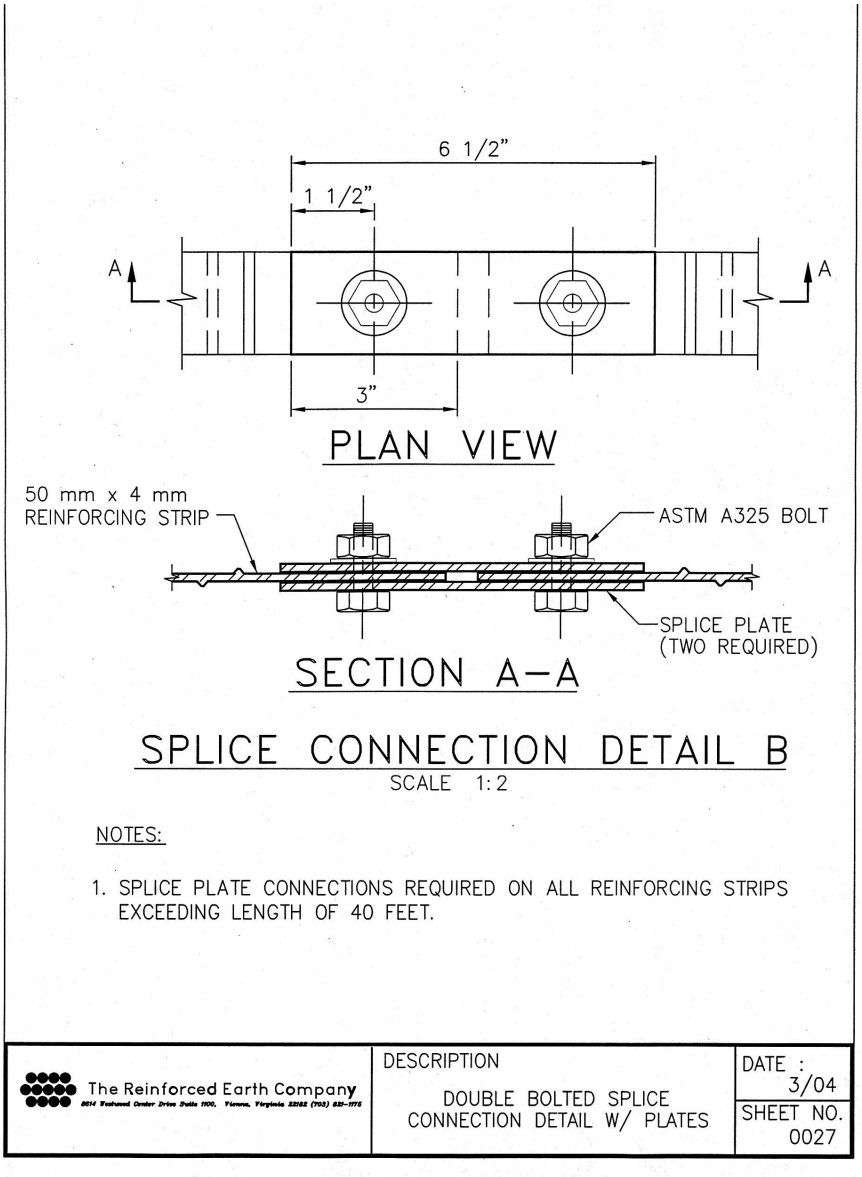
SPLICE CONNECTION DETAIL A

SCALE NTS

NOTES:

1. SPLICE PLATE CONNECTIONS REQUIRED ON ALL REINFORCING STRIPS BETWEEN LENGTH OF 32 FEET AND 40 FEET .

The Reinforced Earth Company	DESCRIPTION SINGLE BOLT SPLICE CONNECTION DETAIL	DATE : 3/04 SHEET NO. 0026



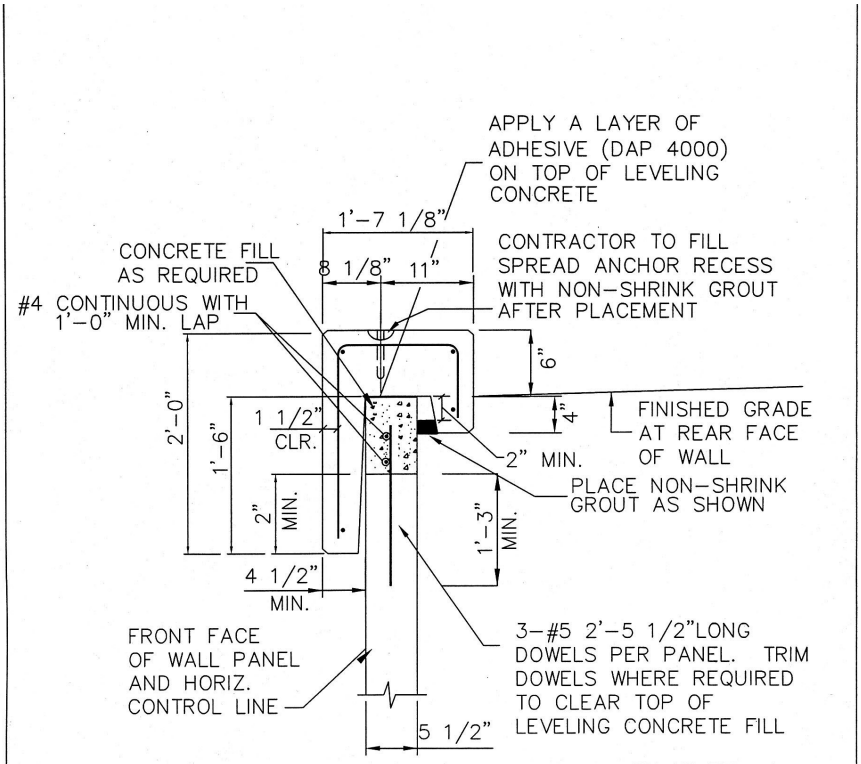
SPLICE CONNECTION DETAIL B

SCALE 1:2

NOTES:

1. SPLICE PLATE CONNECTIONS REQUIRED ON ALL REINFORCING STRIPS EXCEEDING LENGTH OF 40 FEET.

The Reinforced Earth Company 8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION DOUBLE BOLTED SPLICE CONNECTION DETAIL W/ PLATES	DATE : 3/04 SHEET NO. 0027

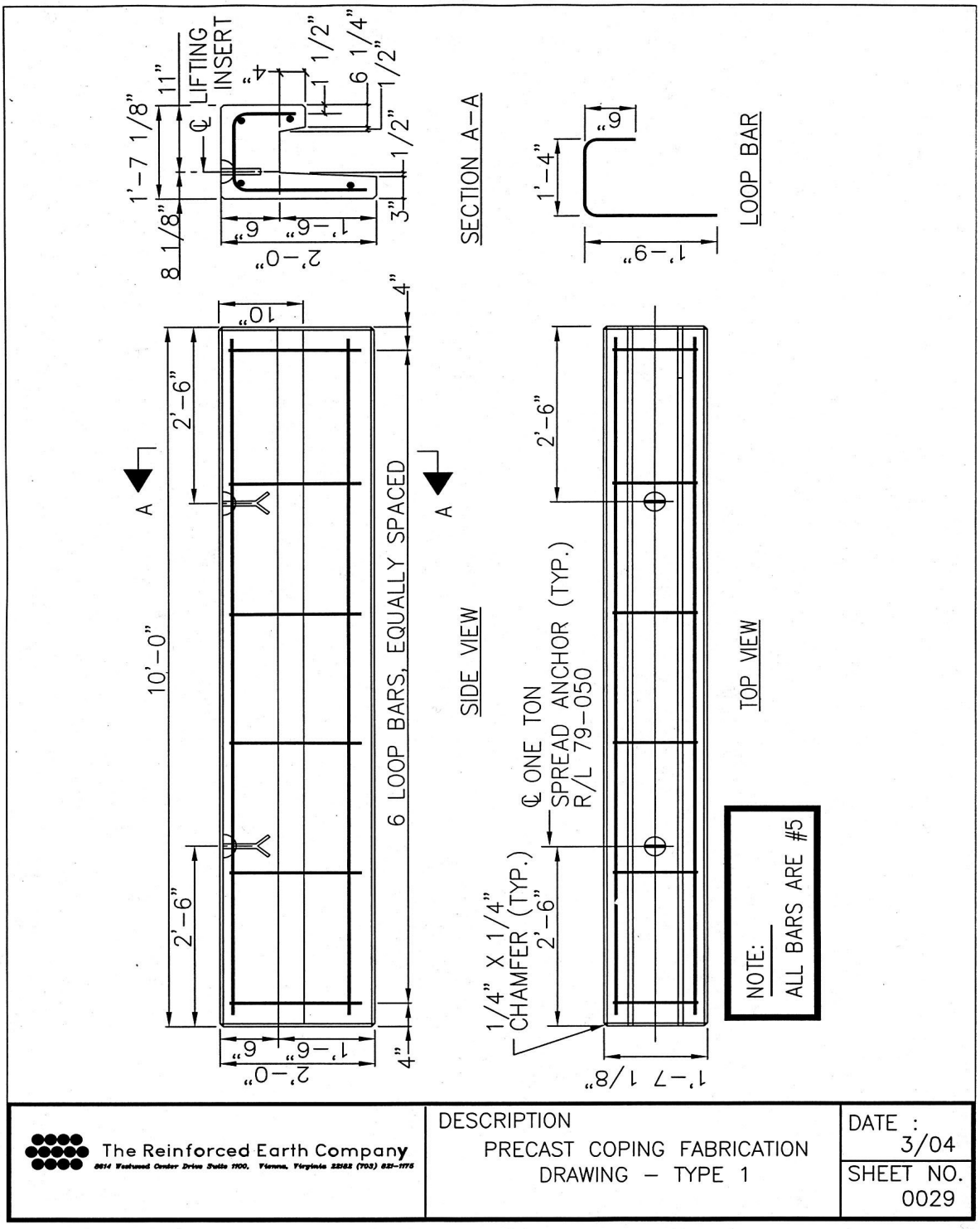


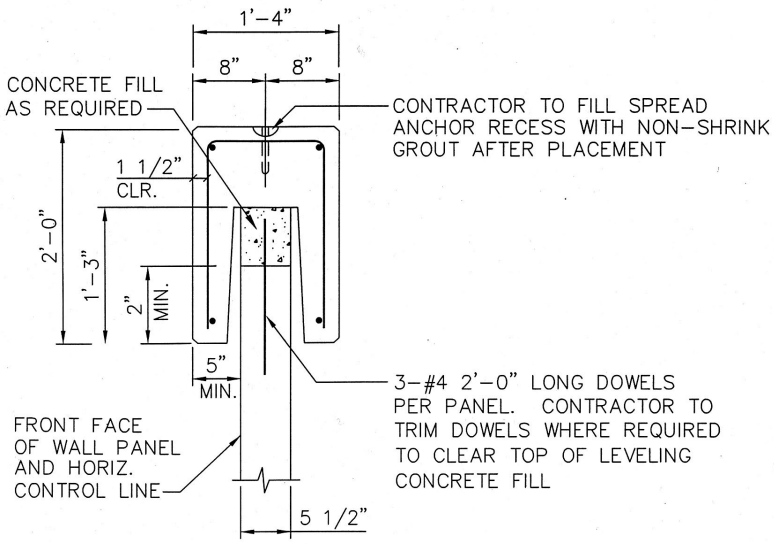
PRECAST COPING SECTION TYPE 1

SCALE: NTS

NOTE:
STANDARD COPING UNIT IS 10-0' LONG.

The Reinforced Earth Company 8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION PRECAST COPING DETAIL – TYPE 1	DATE : 3/04
		SHEET NO. 0028


℄ LIFTING INSERT
1'-7 1/8"
11"
8 1/8"
4"
1 1/2"
6 1/4"
1/2"
1/2"
3"
6"
1'-6"
2'-0"
SECTION A-A
1'-4"
6"
1'-9"
LOOP BAR
4"
10"
2'-6"
A
A
10'-0"
6 LOOP BARS, EQUALLY SPACED
SIDE VIEW
℄ ONE TON SPREAD ANCHOR (TYP.) R/L 79-050
1/4" X 1/4" CHAMFER (TYP.)
2'-6"
TOP VIEW
1'-7 1/8"
NOTE:
ALL BARS ARE #5
The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175
DESCRIPTION
PRECAST COPING FABRICATION
DRAWING – TYPE 1
DATE : 3/04
SHEET NO. 0029



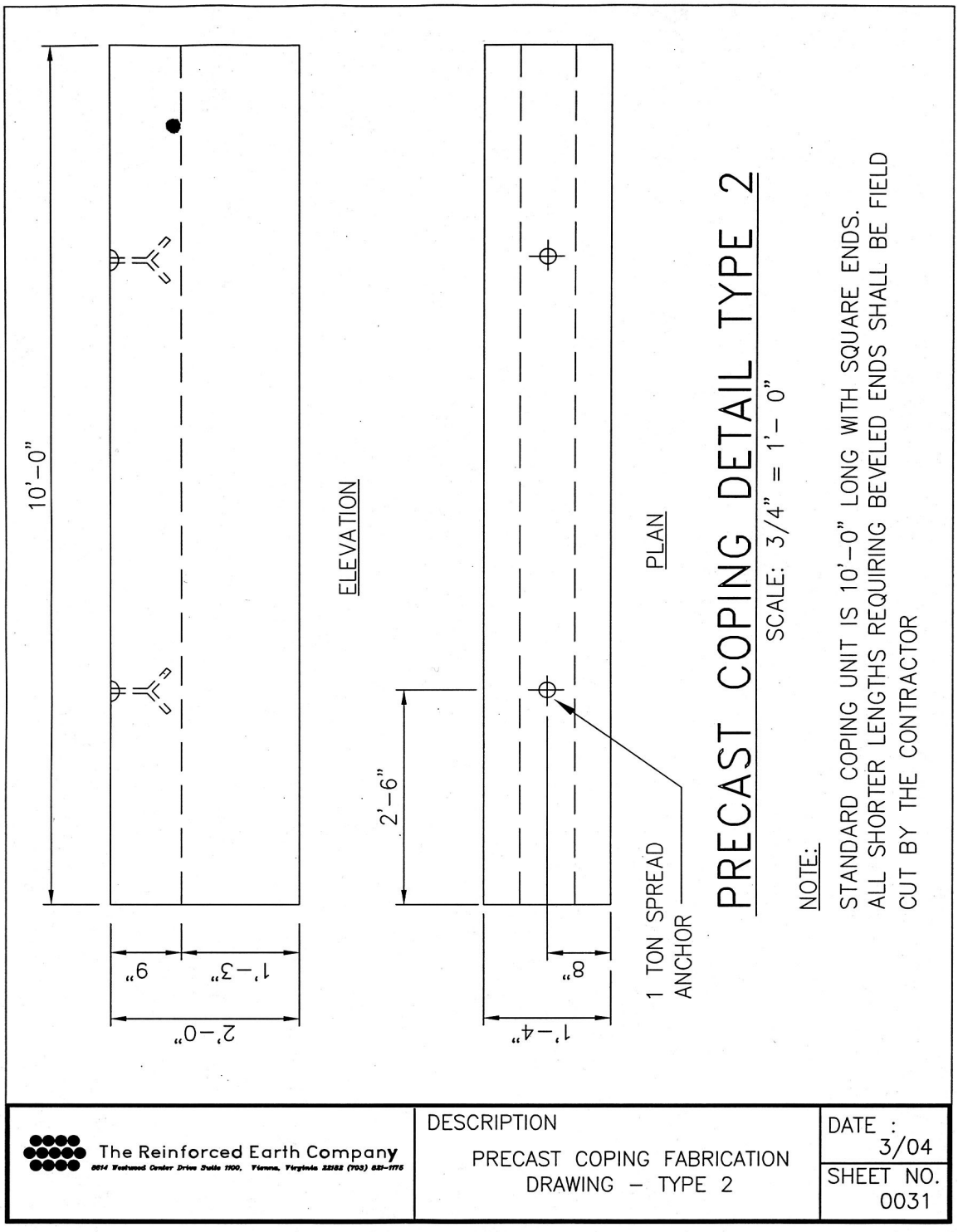
PRECAST COPING SECTION TYPE 2

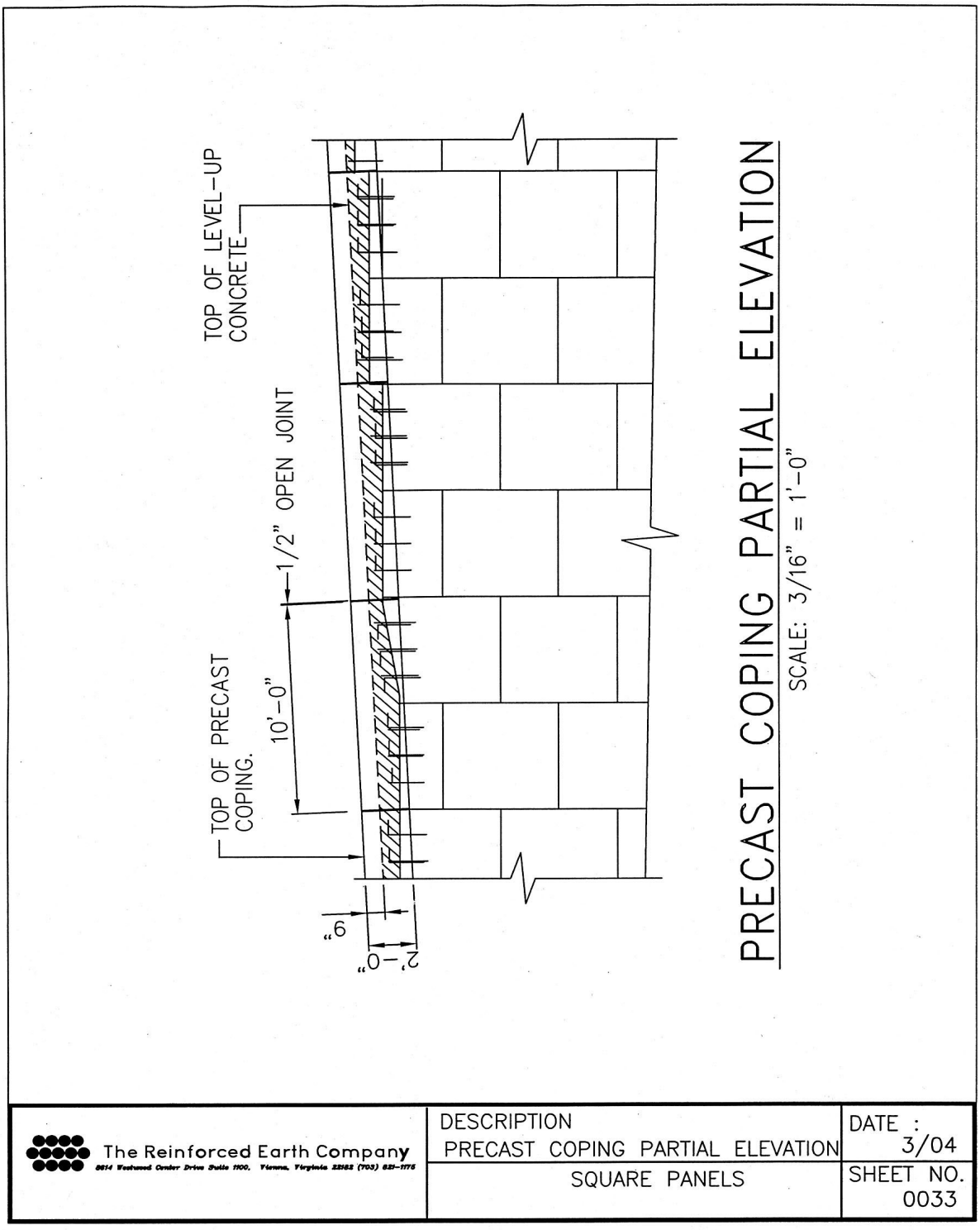
SCALE: 1" = 1'– 0"

NOTE:

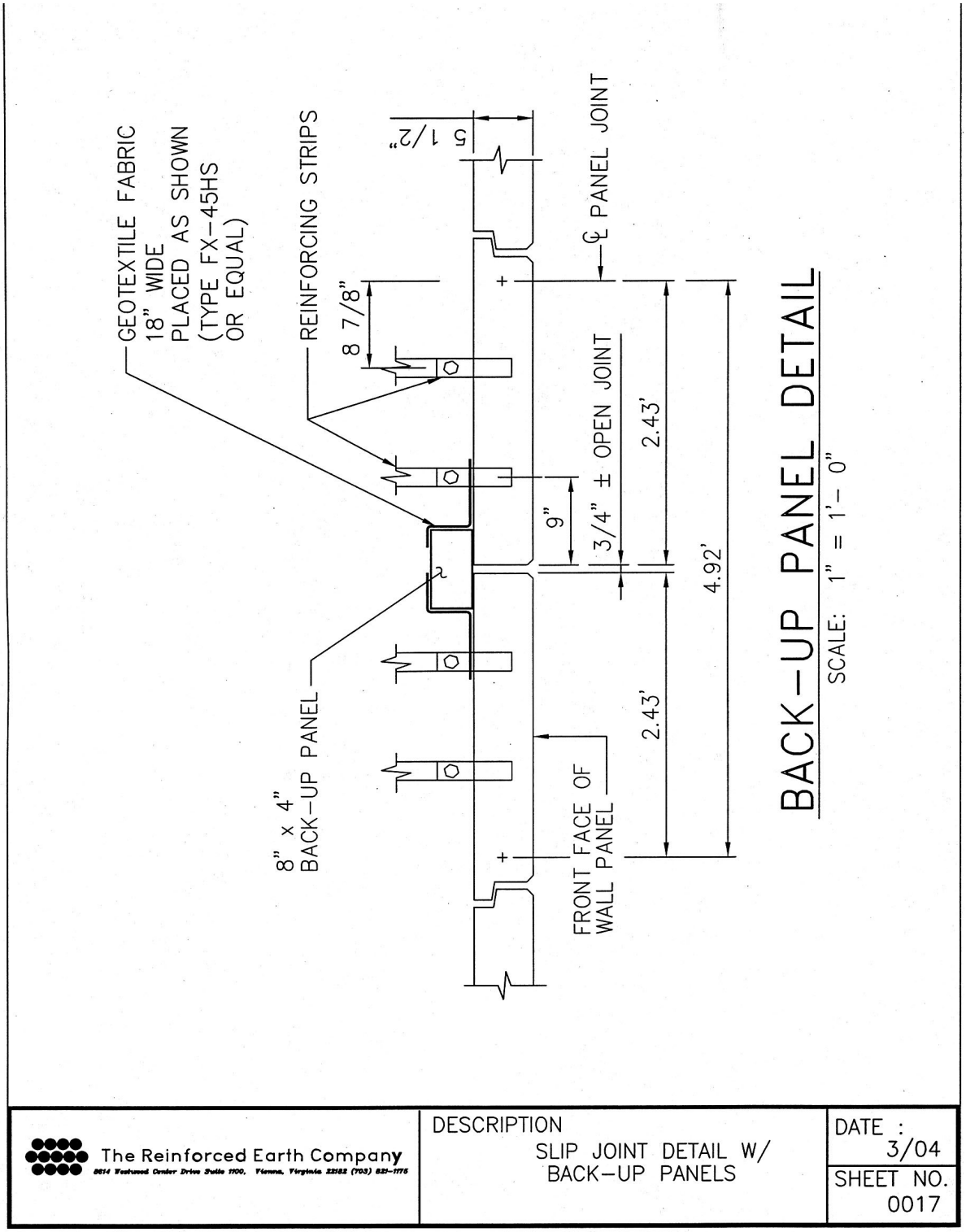
STANDARD COPING UNIT IS 10'–0" LONG WITH SQUARE ENDS.

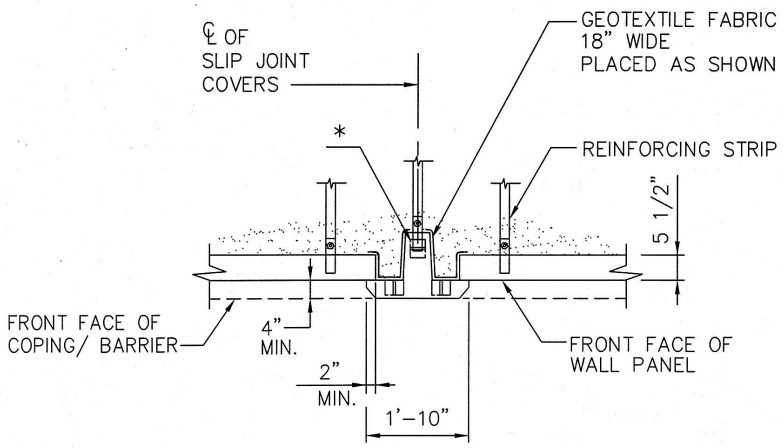
The Reinforced Earth Company 8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION PRECAST COPING DETAIL – TYPE 2	DATE : 3/04
		SHEET NO. 0030


PRECAST COPING DETAIL TYPE 2
SCALE: 3/4" = 1'- 0"
NOTE:
STANDARD COPING UNIT IS 10'-0" LONG WITH SQUARE ENDS.
ALL SHORTER LENGTHS REQUIRING BEVELED ENDS SHALL BE FIELD CUT BY THE CONTRACTOR
ELEVATION
PLAN
10'-0"
2'-6"
2'-0"
1'-3"
9"
1'-4"
8"
1 TON SPREAD ANCHOR
The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1775
DESCRIPTION
PRECAST COPING FABRICATION DRAWING – TYPE 2
DATE : 3/04
SHEET NO. 0031



The Reinforced Earth Company 8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION PRECAST COPING PARTIAL ELEVATION SQUARE PANELS	DATE : 3/04 SHEET NO. 0033


GEOTEXTILE FABRIC
18" WIDE
PLACED AS SHOWN
(TYPE FX-45HS
OR EQUAL)
REINFORCING STRIPS
8 7/8"
5 1/2"
℄ PANEL JOINT
3/4" ± OPEN JOINT
9"
2.43'
2.43'
4.92'
8" x 4"
BACK-UP PANEL
FRONT FACE OF
WALL PANEL
BACK-UP PANEL DETAIL
SCALE: 1" = 1'- 0"
The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175
DESCRIPTION
SLIP JOINT DETAIL W/
BACK-UP PANELS
DATE :
3/04
SHEET NO.
0017

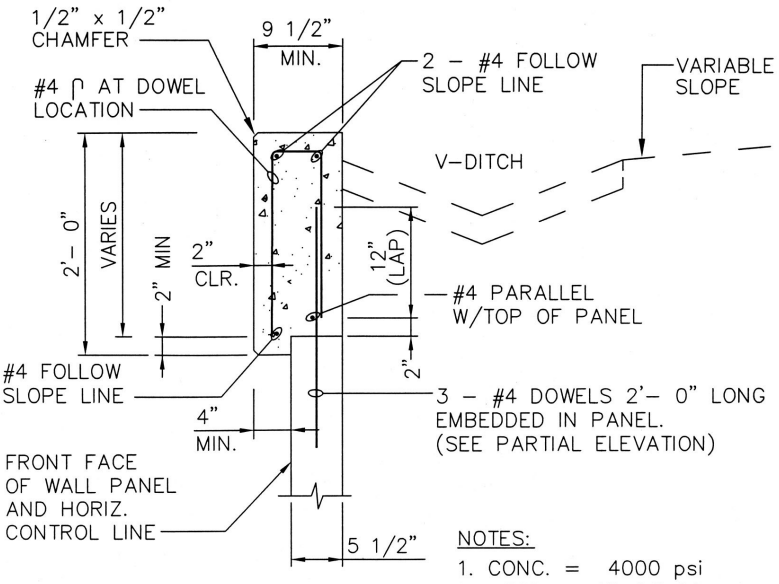


SLIP JOINT COVER DETAIL

SCALE: 1/2" = 1'- 0"

* THREE BEARING PADS PER UNIT, BASE STEM OF BEARING PAD SHALL BE FIELD CUT TO FIT FLAT ON TOP OF CORNER ELEMENT. FRONT PADS SHALL BE PLACED ON INSIDE EDGE OF LIP.

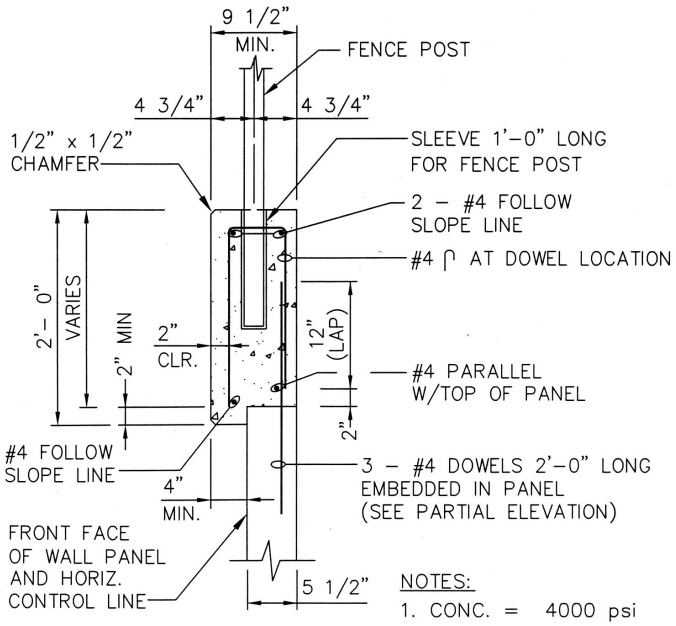
The Reinforced Earth Company 8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION SLIP JOINT COVER DETAIL	DATE : 3/04
		SHEET NO. 0018



C.I.P. CONC. COPING W/DITCH

SCALE: 1" = 1'– 0"

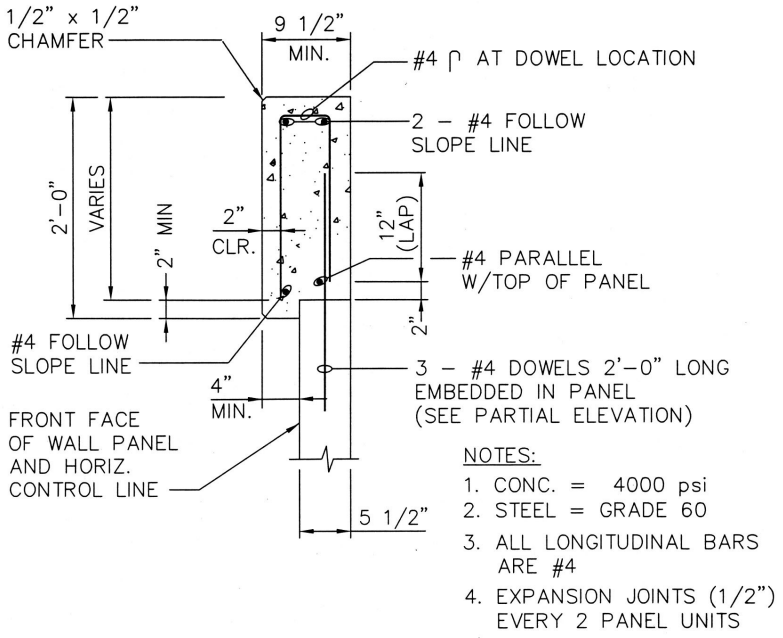
The Reinforced Earth Company 8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION C.I.P. COPING W/ DITCH DETAIL	DATE : 3/04
		SHEET NO. 0010



C.I.P. CONC. COPING W/FENCE

SCALE: 1" = 1'- 0"

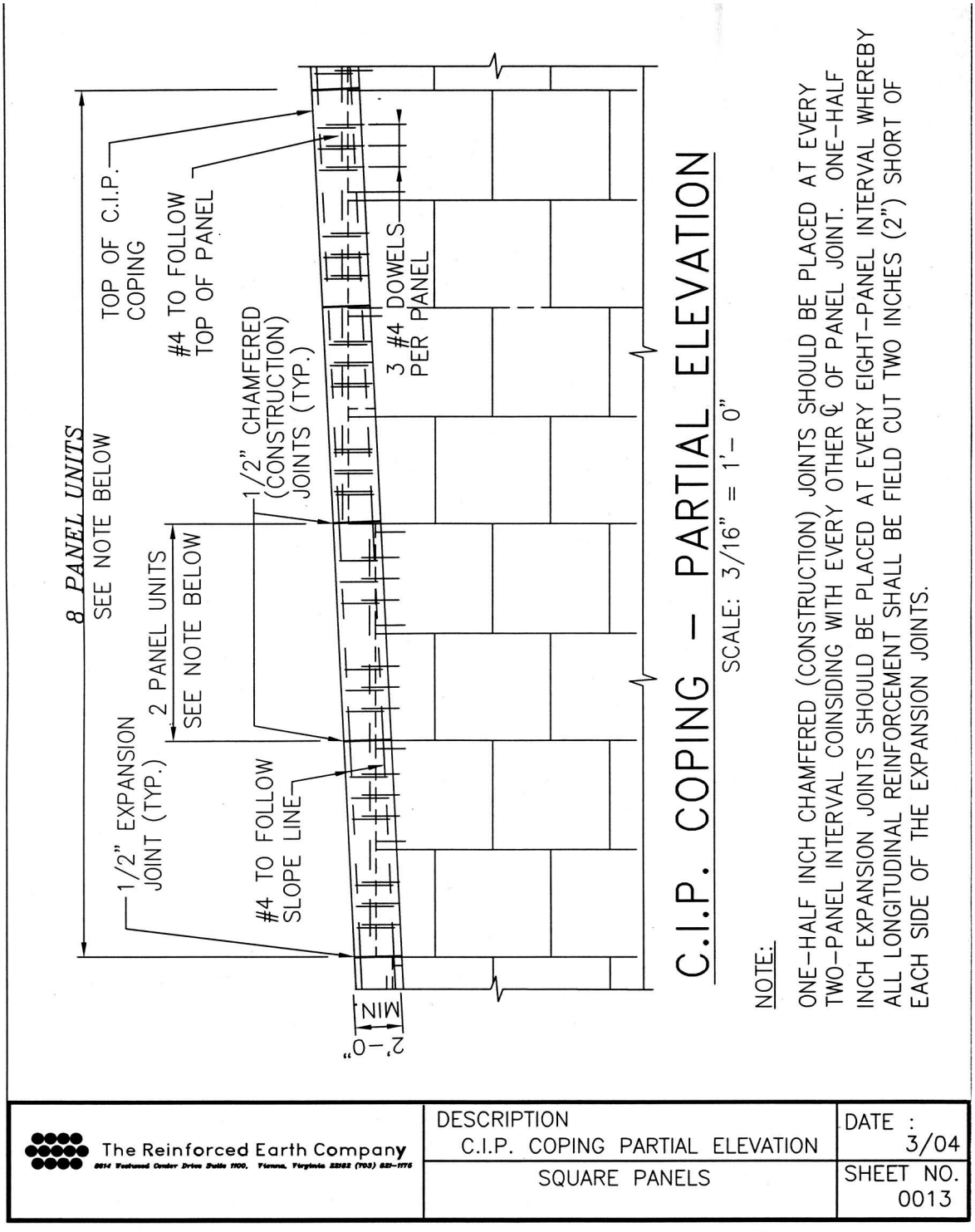
The Reinforced Earth Company	DESCRIPTION C.I.P. COPING W/ FENCE DETAIL	DATE : 3/04
		SHEET NO. 0011

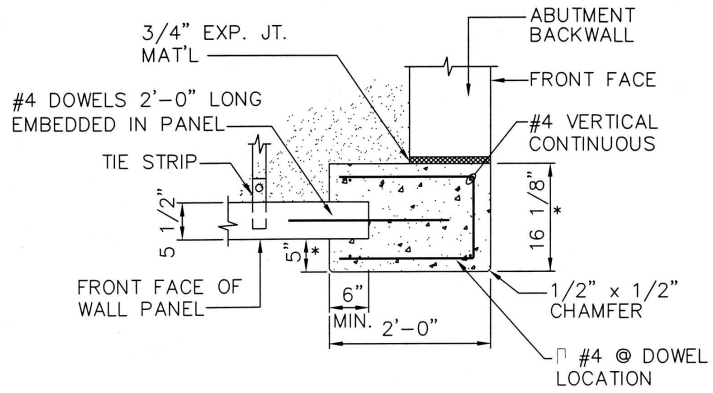


C.I.P. CONC. COPING

SCALE: 1" = 1'– 0"

The Reinforced Earth Company 8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION C.I.P. COPING DETAIL	DATE : 3/04
		SHEET NO. 0009


8 PANEL UNITS
SEE NOTE BELOW
TOP OF C.I.P. COPING
#4 TO FOLLOW TOP OF PANEL
1/2" CHAMFERED (CONSTRUCTION) JOINTS (TYP.)
3 #4 DOWELS PER PANEL
2 PANEL UNITS
SEE NOTE BELOW
1/2" EXPANSION JOINT (TYP.)
#4 TO FOLLOW SLOPE LINE
2'-0" MIN.
C.I.P. COPING – PARTIAL ELEVATION
SCALE: 3/16" = 1'- 0"
NOTE:
ONE-HALF INCH CHAMFERED (CONSTRUCTION) JOINTS SHOULD BE PLACED AT EVERY TWO-PANEL INTERVAL COINSIDING WITH EVERY OTHER ℄ OF PANEL JOINT. ONE-HALF INCH EXPANSION JOINTS SHOULD BE PLACED AT EVERY EIGHT-PANEL INTERVAL WHEREBY ALL LONGITUDINAL REINFORCEMENT SHALL BE FIELD CUT TWO INCHES (2") SHORT OF EACH SIDE OF THE EXPANSION JOINTS.
The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175
DESCRIPTION
C.I.P. COPING PARTIAL ELEVATION
SQUARE PANELS
DATE : 3/04
SHEET NO. 0013

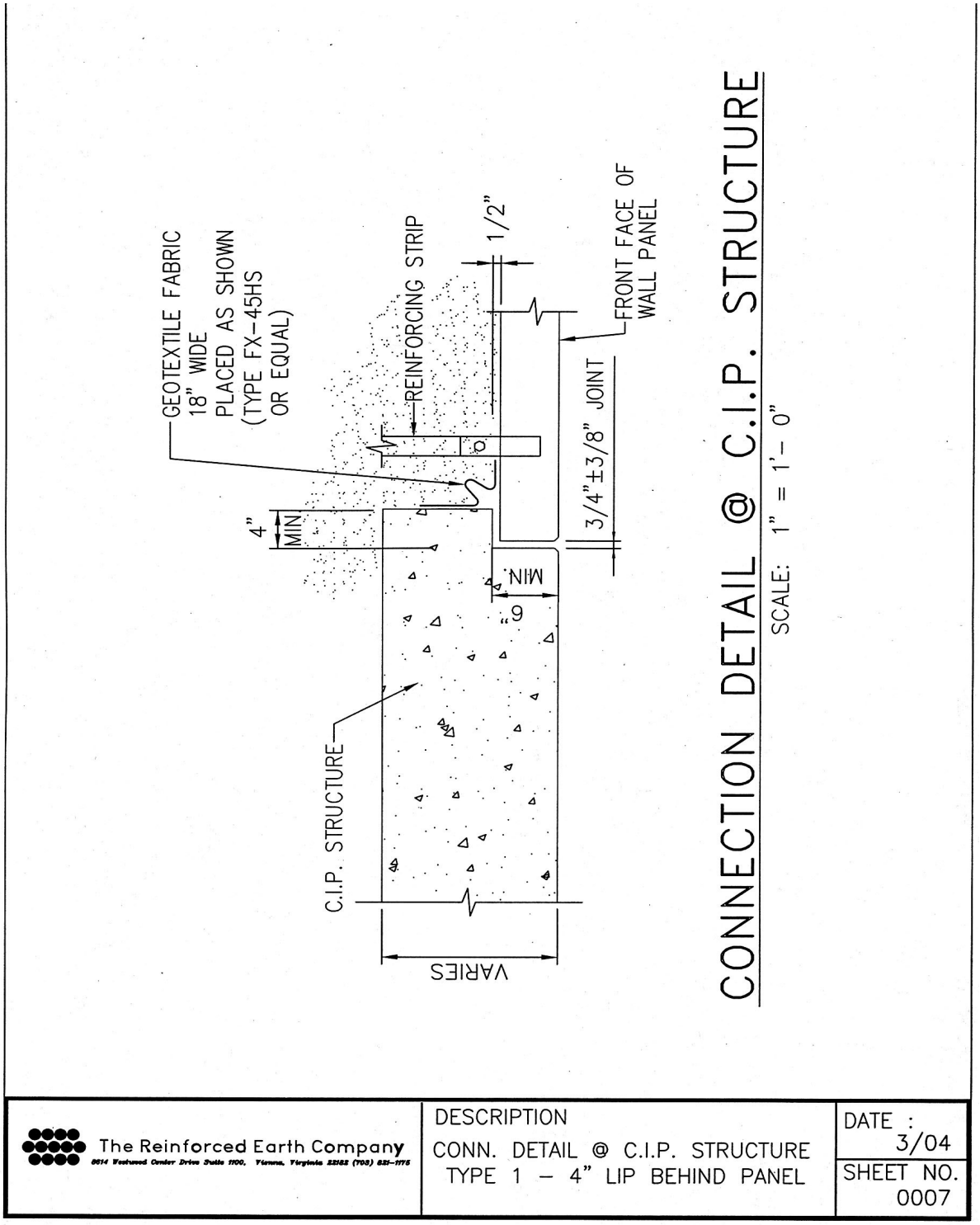


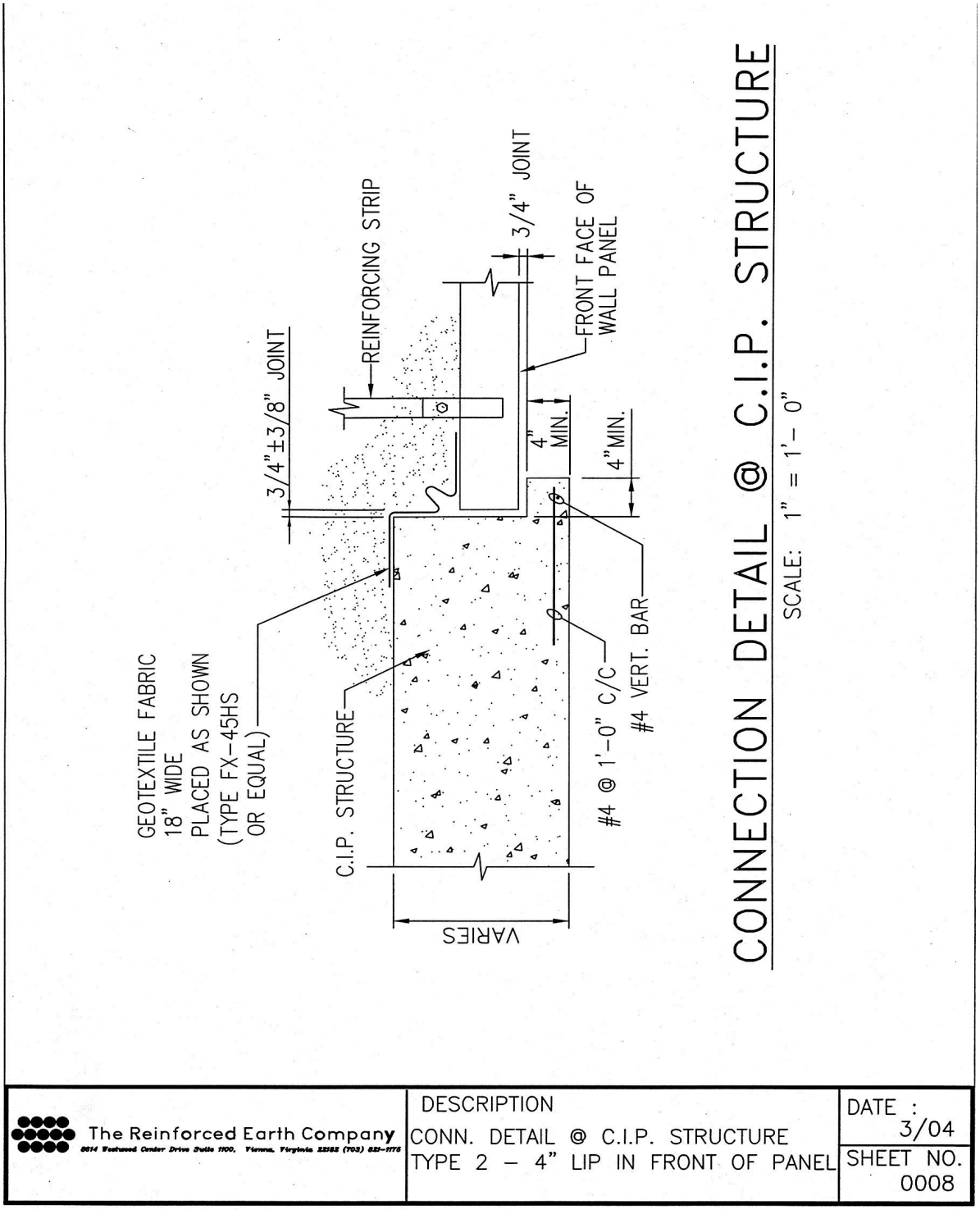
* TO MATCH PRECAST COPING

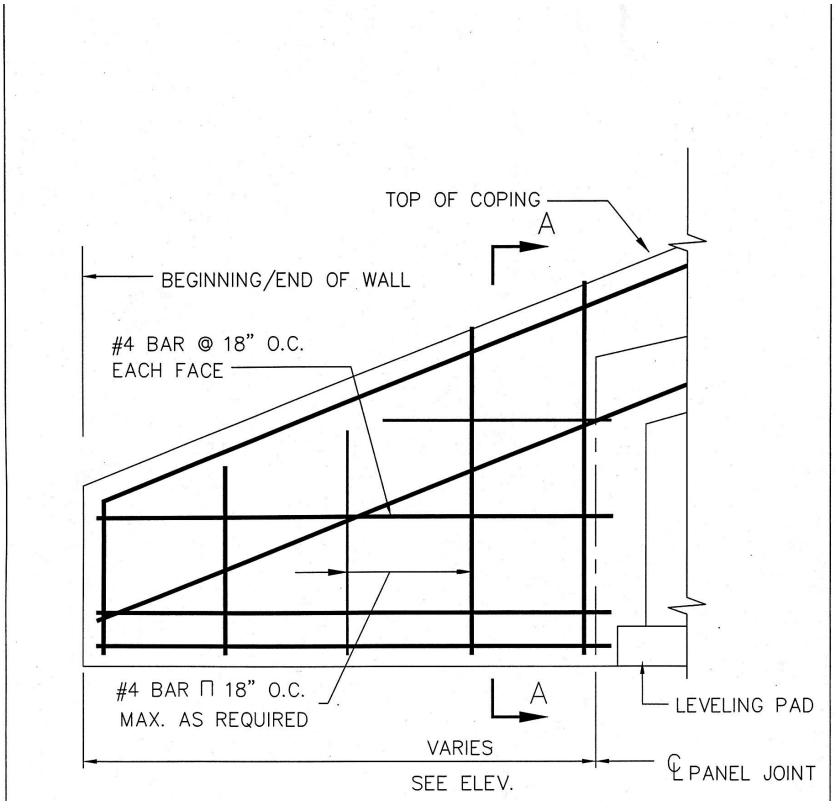
CONC VERTICAL COPING DETAIL

SCALE: 3/4"=1'-0"

The Reinforced Earth Company	DESCRIPTION C.I.P. VERTICAL COPING – TO MATCH PRECAST COPING	DATE : 3/04
		SHEET NO. 0014


GEOTEXTILE FABRIC
18" WIDE
PLACED AS SHOWN
(TYPE FX-45HS
OR EQUAL)
REINFORCING STRIP
1/2"
FRONT FACE OF
WALL PANEL
3/4"±3/8" JOINT
4"
MIN.
6"
MIN.
C.I.P. STRUCTURE
VARIES
CONNECTION DETAIL @ C.I.P. STRUCTURE
SCALE: 1" = 1'- 0"
The Reinforced Earth Company
DESCRIPTION
CONN. DETAIL @ C.I.P. STRUCTURE
TYPE 1 – 4" LIP BEHIND PANEL
DATE : 3/04
SHEET NO. 0007

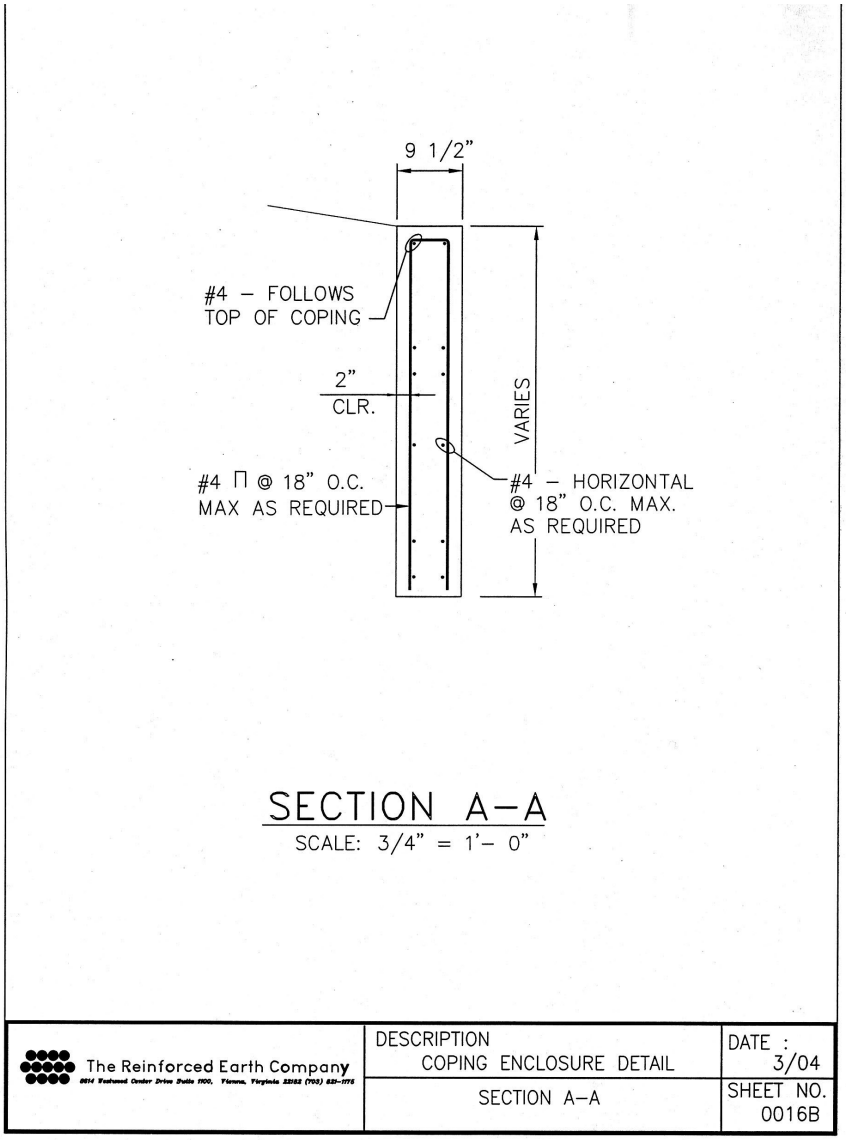

CONNECTION DETAIL @ C.I.P. STRUCTURE
SCALE: 1" = 1'- 0"
GEOTEXTILE FABRIC
18" WIDE
PLACED AS SHOWN
(TYPE FX-45HS
OR EQUAL)
C.I.P. STRUCTURE
3/4"±3/8" JOINT
REINFORCING STRIP
3/4" JOINT
FRONT FACE OF
WALL PANEL
4"
MIN.
4"MIN.
#4 @ 1'-0" C/C
#4 VERT. BAR
VARIES
The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175
DESCRIPTION
CONN. DETAIL @ C.I.P. STRUCTURE
TYPE 2 – 4" LIP IN FRONT OF PANEL
DATE : 3/04
SHEET NO. 0008



COPING ENCLOSURE DETAIL

SCALE: 3/4" = 1'– 0"

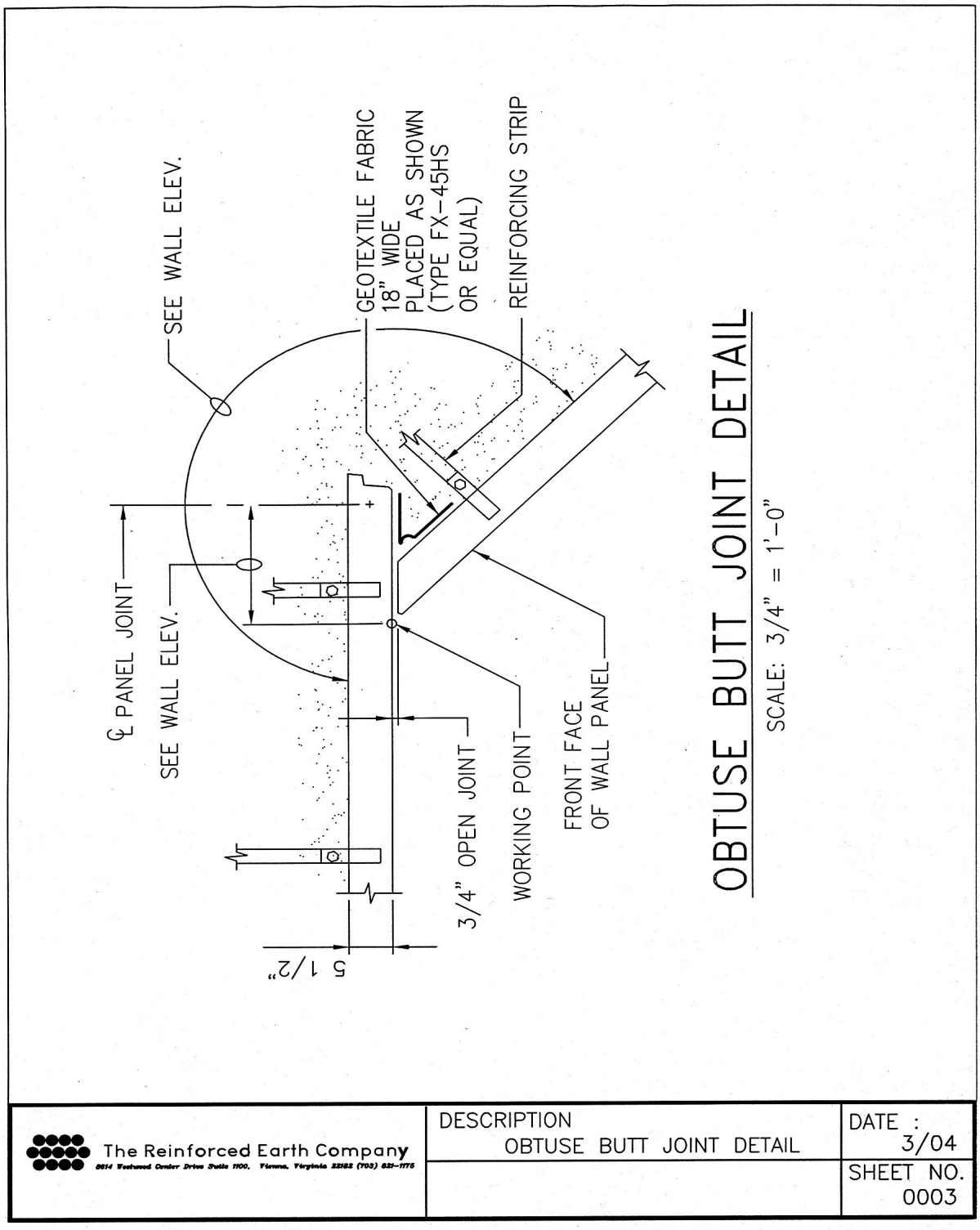
The Reinforced Earth Company	DESCRIPTION COPING ENCLOSURE DETAIL	DATE : 3/04
	PARTIAL ELEVATION	SHEET NO. 0016A

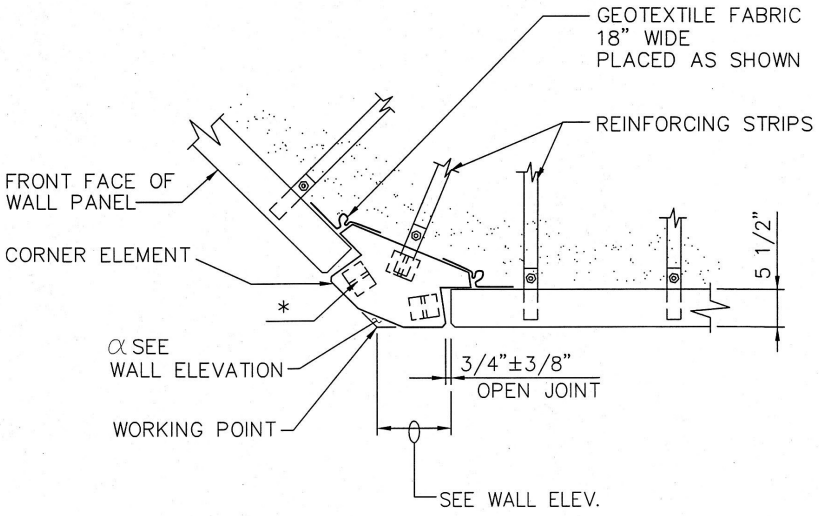


SECTION A–A

SCALE: 3/4" = 1'– 0"

The Reinforced Earth Company 8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION COPING ENCLOSURE DETAIL	DATE : 3/04
	SECTION A–A	SHEET NO. 0016B


SEE WALL ELEV.
GEOTEXTILE FABRIC
18" WIDE
PLACED AS SHOWN
(TYPE FX-45HS
OR EQUAL)
REINFORCING STRIP
℄ PANEL JOINT
SEE WALL ELEV.
3/4" OPEN JOINT
WORKING POINT
FRONT FACE
OF WALL PANEL
5 1/2"
OBTUSE BUTT JOINT DETAIL
SCALE: 3/4" = 1'-0"
The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175
DESCRIPTION
OBTUSE BUTT JOINT DETAIL
DATE : 3/04
SHEET NO. 0003

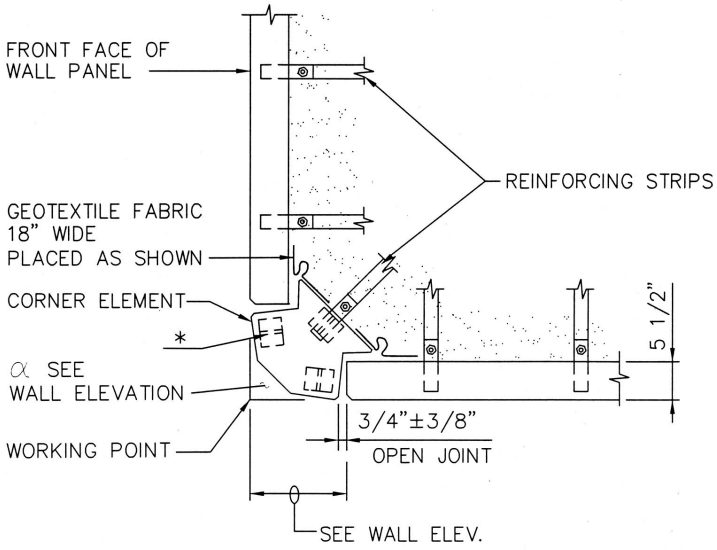


OBTUSE CORNER ELEMENT DETAIL

SCALE: 3/4" = 1'– 0"

* THREE BEARING PADS PER UNIT, BASE STEM OF BEARING PAD SHALL BE FIELD CUT TO FIT FLAT ON TOP OF CORNER ELEMENT. FRONT PADS SHALL BE PLACED ON INSIDE EDGE OF LIP.

The Reinforced Earth Company 8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION OBTUSE CORNER ELEMENT DETAIL	DATE : 3/04
		SHEET NO. 0006

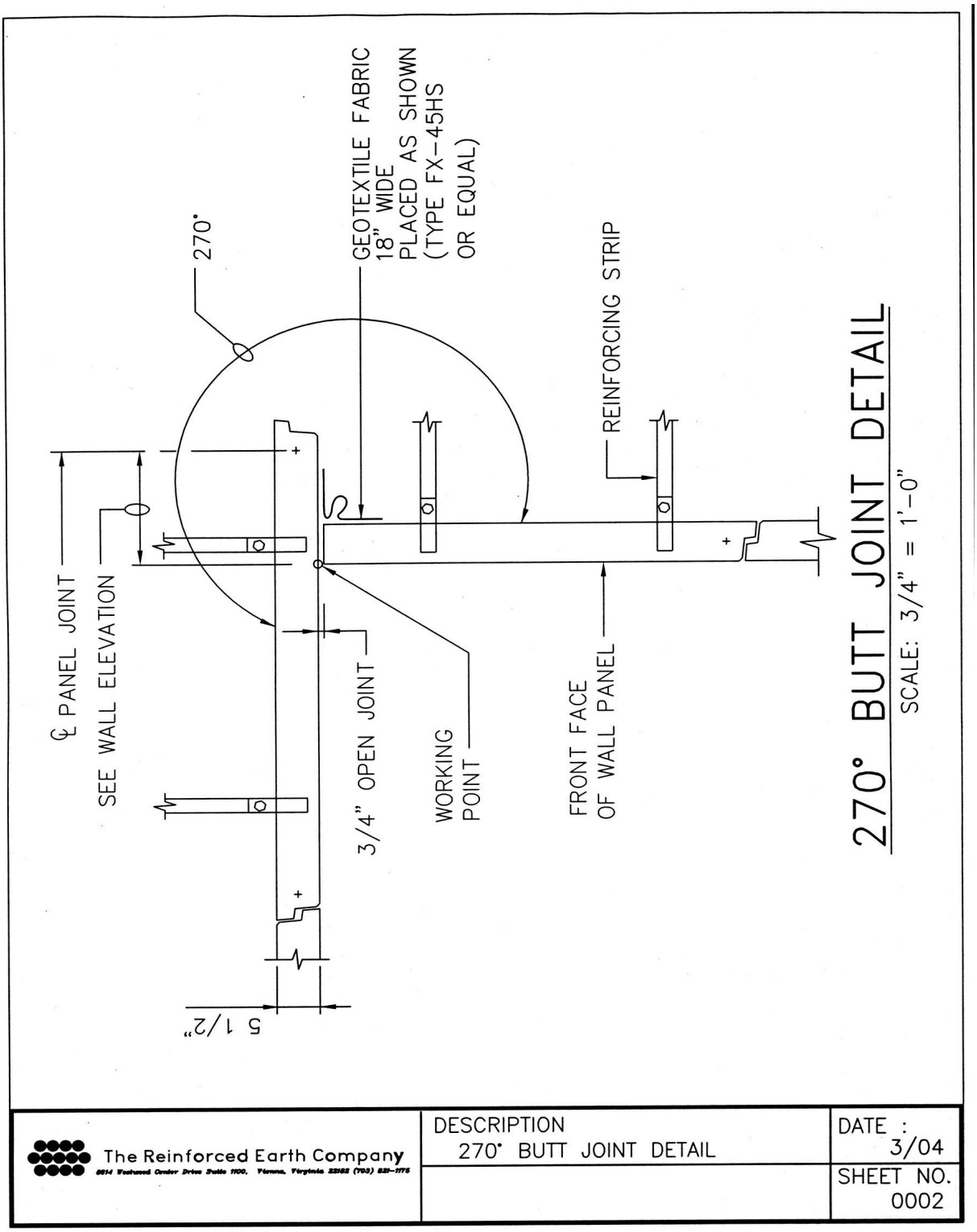


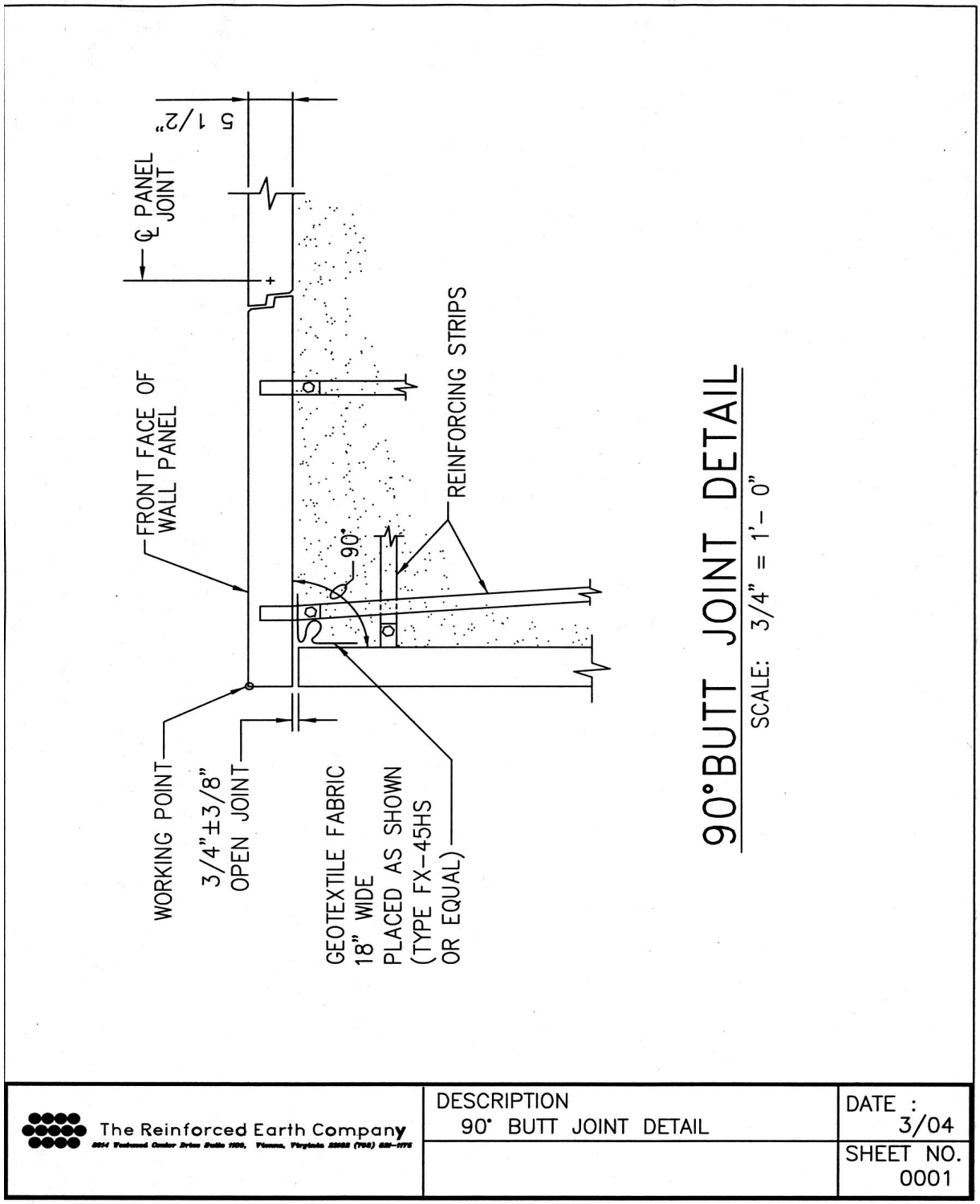
90° CORNER ELEMENT DETAIL

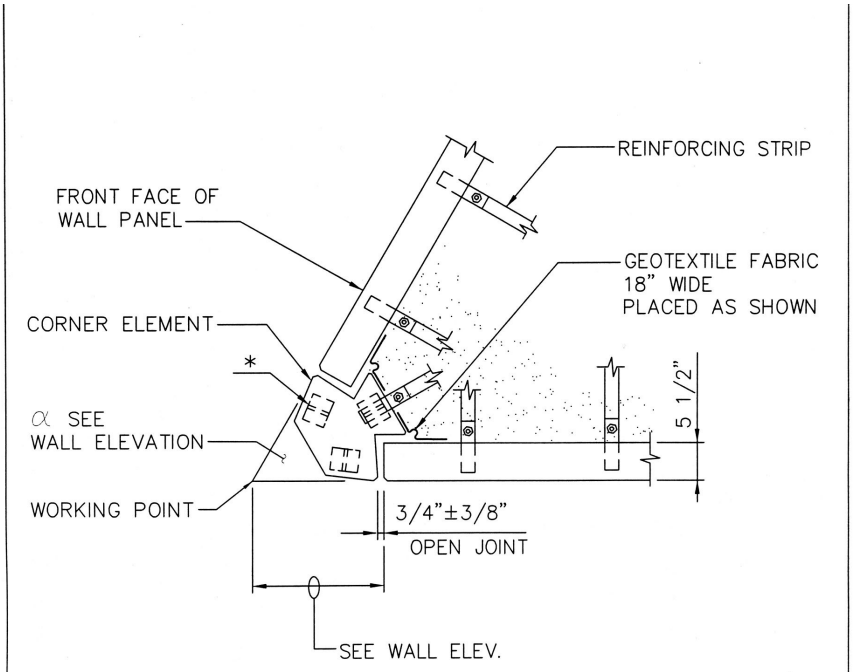
SCALE: 3/4" = 1'– 0"

* THREE BEARING PADS PER UNIT, BASE STEM OF BEARING PAD SHALL BE FIELD CUT TO FIT FLAT ON TOP OF CORNER ELEMENT. FRONT PADS SHALL BE PLACED ON INSIDE EDGE OF LIP.

The Reinforced Earth Company 8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION 90° CORNER ELEMENT DETAIL	DATE : 3/04
		SHEET NO. 0005


270°
GEOTEXTILE FABRIC
18" WIDE
PLACED AS SHOWN
(TYPE FX-45HS
OR EQUAL)
REINFORCING STRIP
℄ PANEL JOINT
SEE WALL ELEVATION
3/4" OPEN JOINT
WORKING
POINT
FRONT FACE
OF WALL PANEL
5 1/2"
270° BUTT JOINT DETAIL
SCALE: 3/4" = 1'-0"
The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175
DESCRIPTION
270° BUTT JOINT DETAIL
DATE :
3/04
SHEET NO.
0002


5 1/2"
℄ PANEL JOINT
FRONT FACE OF WALL PANEL
REINFORCING STRIPS
90°
WORKING POINT
3/4"±3/8" OPEN JOINT
GEOTEXTILE FABRIC 18" WIDE PLACED AS SHOWN (TYPE FX-45HS OR EQUAL)
90° BUTT JOINT DETAIL
SCALE: 3/4" = 1'- 0"
The Reinforced Earth Company
DESCRIPTION
90° BUTT JOINT DETAIL
DATE : 3/04
SHEET NO. 0001

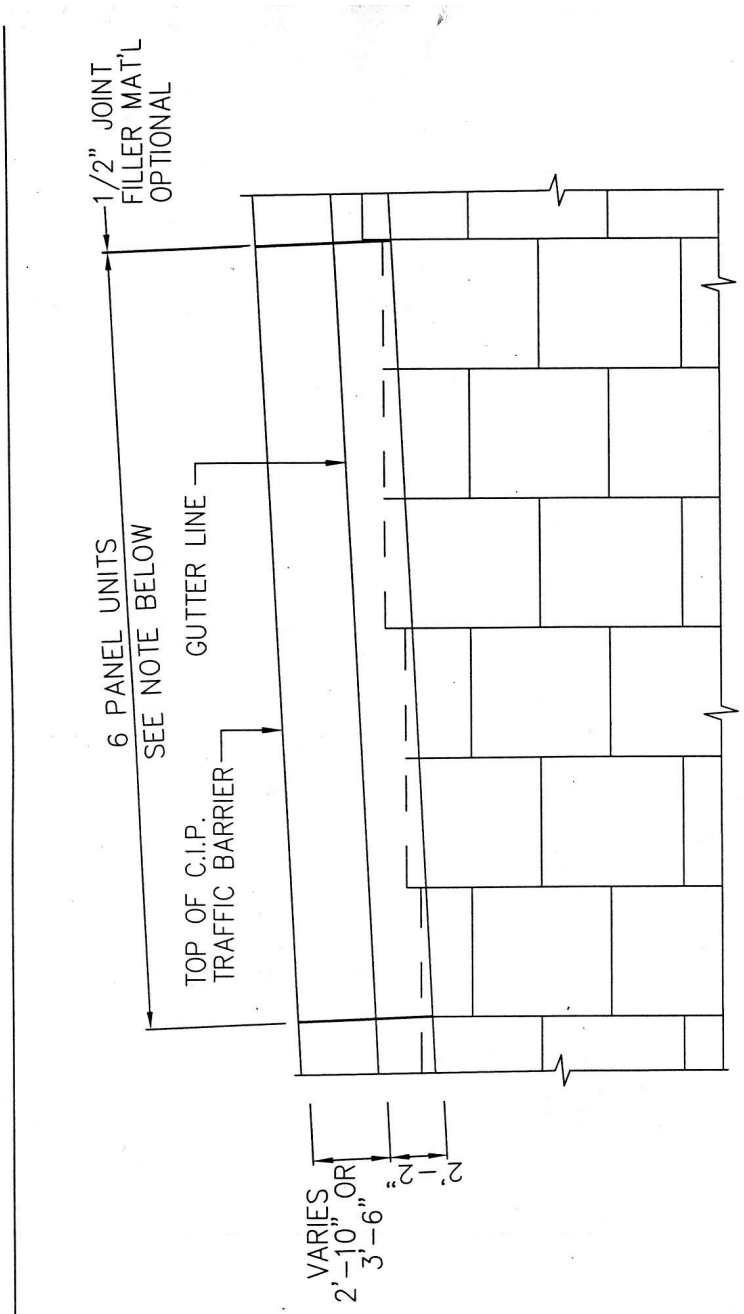


ACUTE CORNER ELEMENT DETAIL

SCALE: 3/4" = 1'– 0"

* THREE BEARING PADS PER UNIT, BASE STEM OF BEARING PAD SHALL BE FIELD CUT TO FIT FLAT ON TOP OF CORNER ELEMENT. FRONT PADS SHALL BE PLACED ON INSIDE EDGE OF LIP.

The Reinforced Earth Company	DESCRIPTION ACUTE CORNER ELEMENT DETAIL	DATE : 3/04
		SHEET NO. 0004

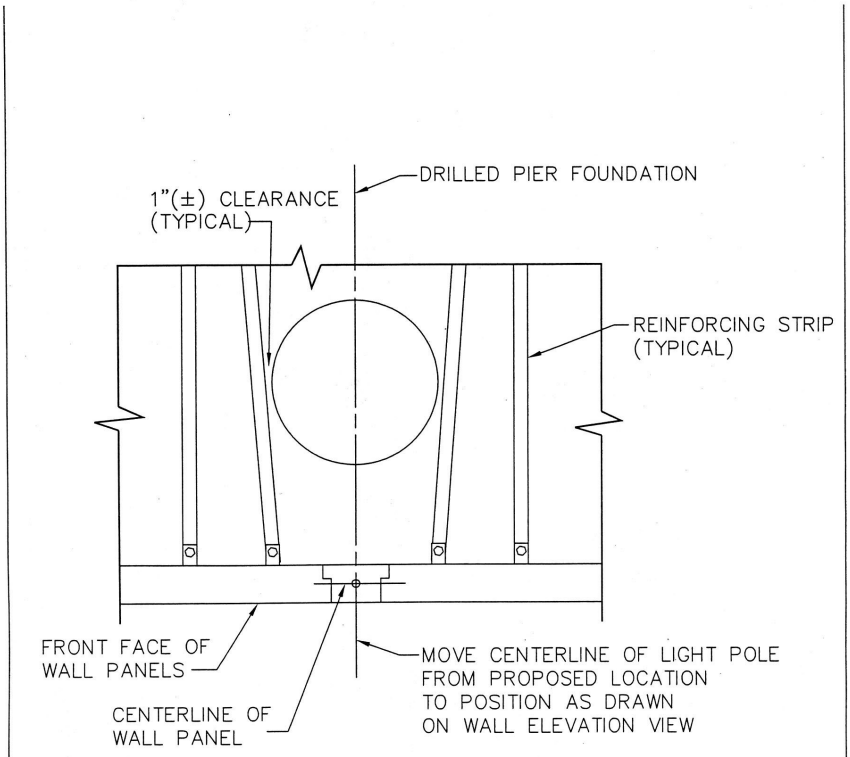


NOTE:
JOINTS IN PAVEMENT OR JUNCTION SLAB SHALL COINCIDE WITH JOINTS IN BARRIER.

C.I.P. TRAFFIC BARRIER
PARTIAL ELEVATION

SCALE: 3/16"=1'-0"

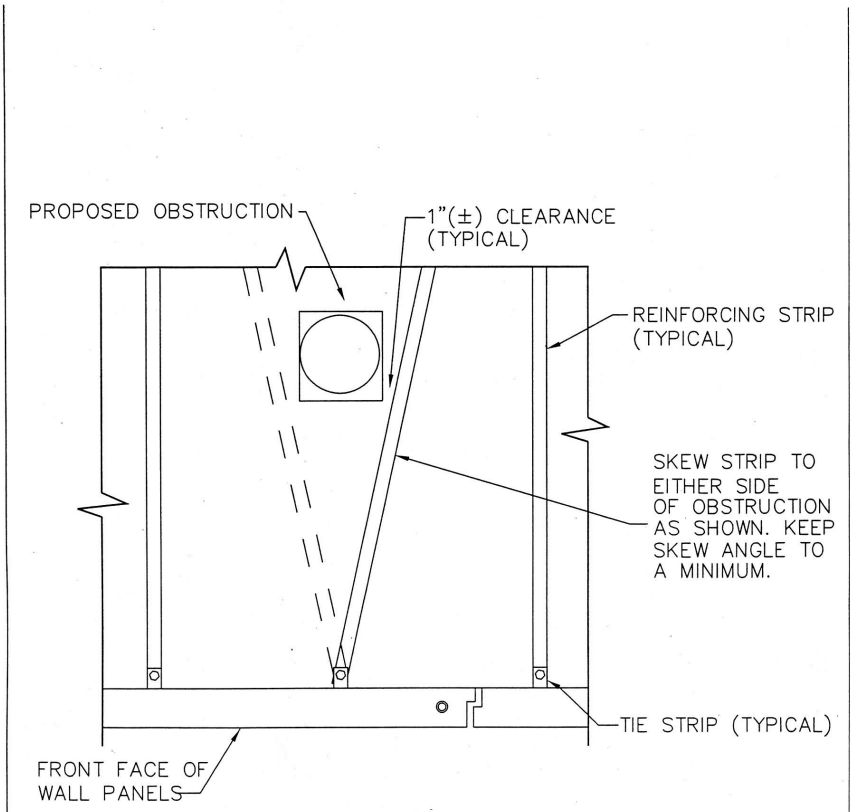
The Reinforced Earth Company 8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION C.I.P. BARRIER PARTIAL ELEVATION SQUARE PANELS	DATE : 3/04 SHEET NO. 0035



PARTIAL WALL PLAN AT LIGHT POLE

SCALE: 3/4" = 1'-0"

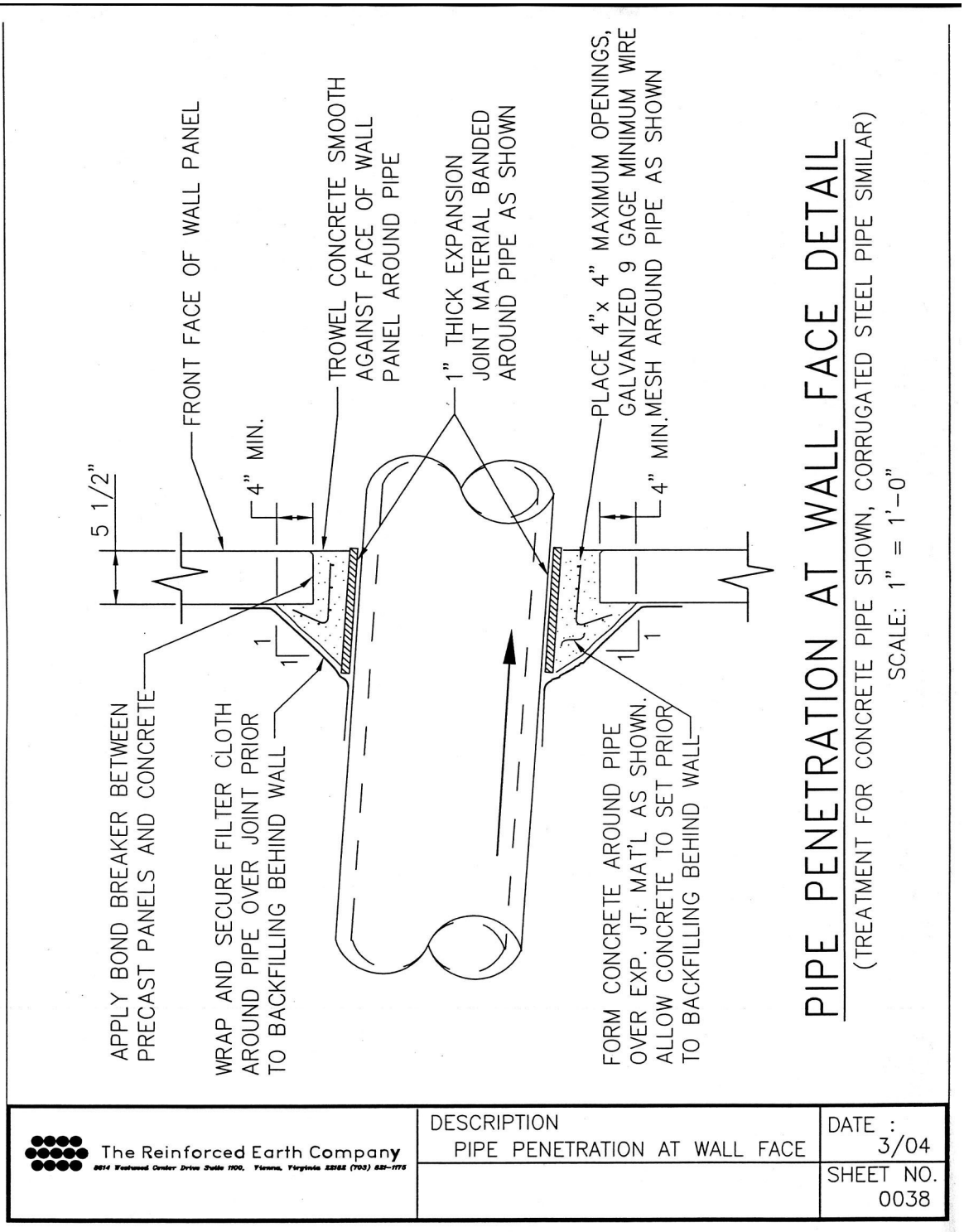
The Reinforced Earth Company	DESCRIPTION PARTIAL PLAN AT LIGHT POLE	DATE : 3/04
		SHEET NO. 0036

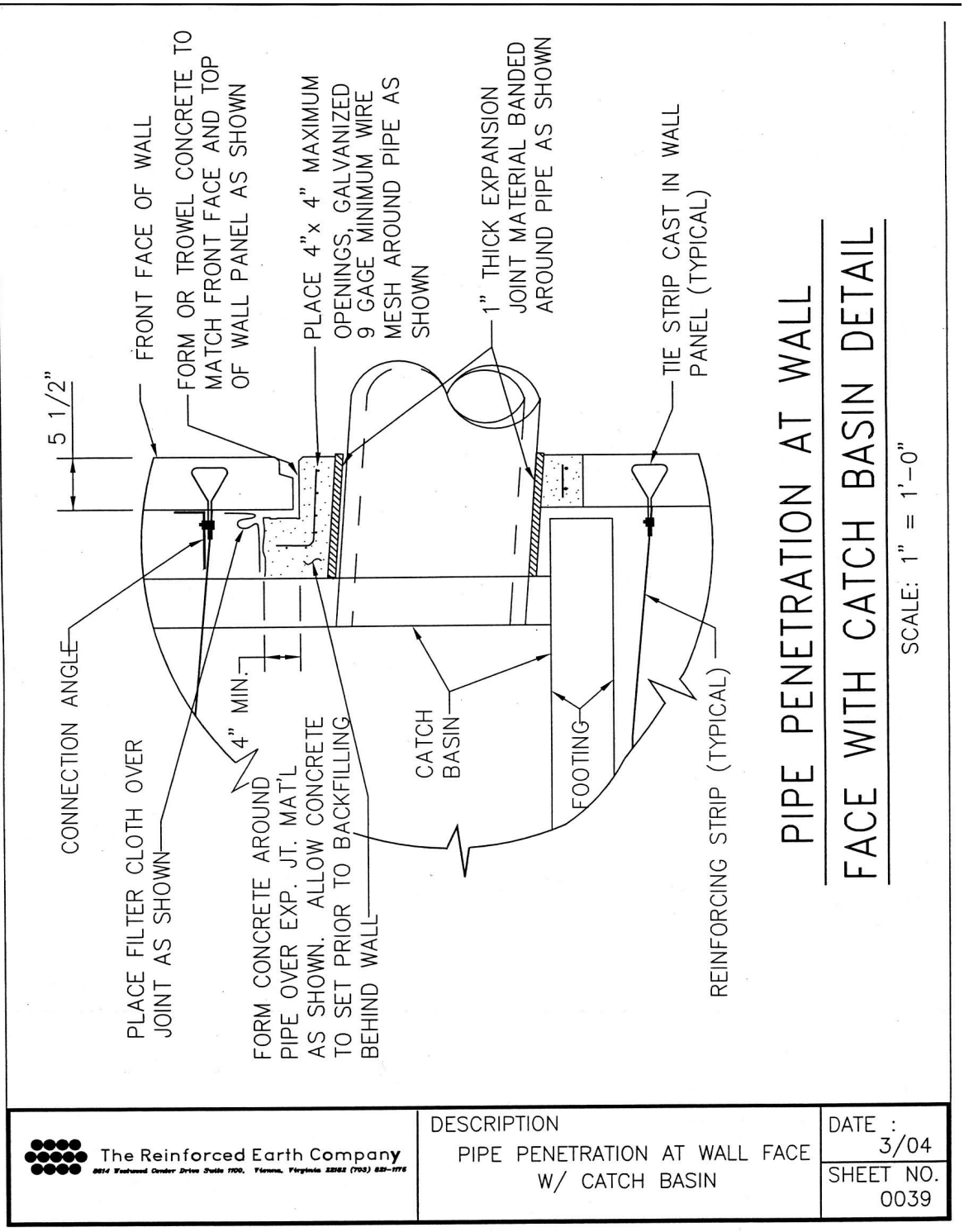


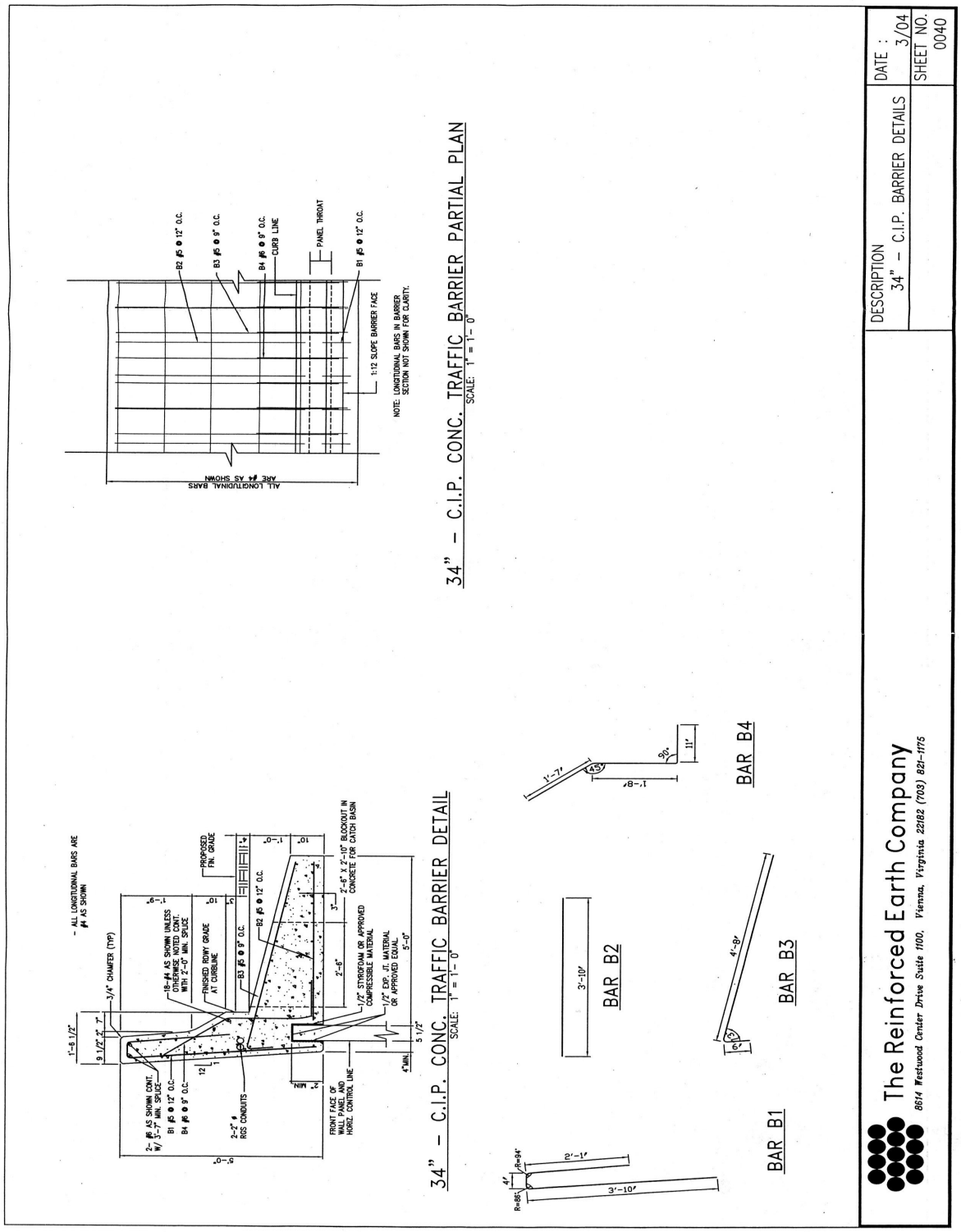
PARTIAL WALL PLAN AT OBSTRUCTION

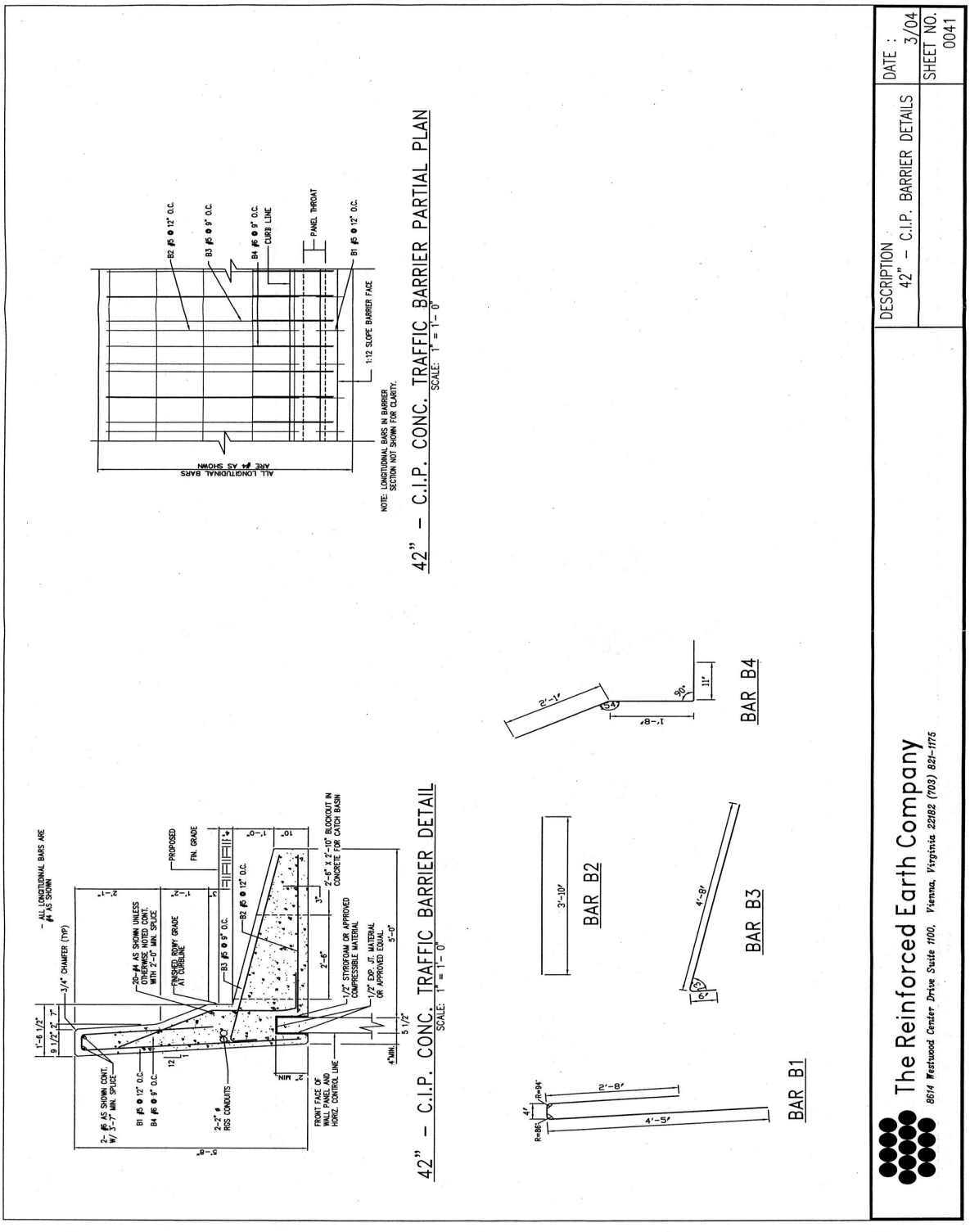
SCALE: 3/4" = 1'–0"

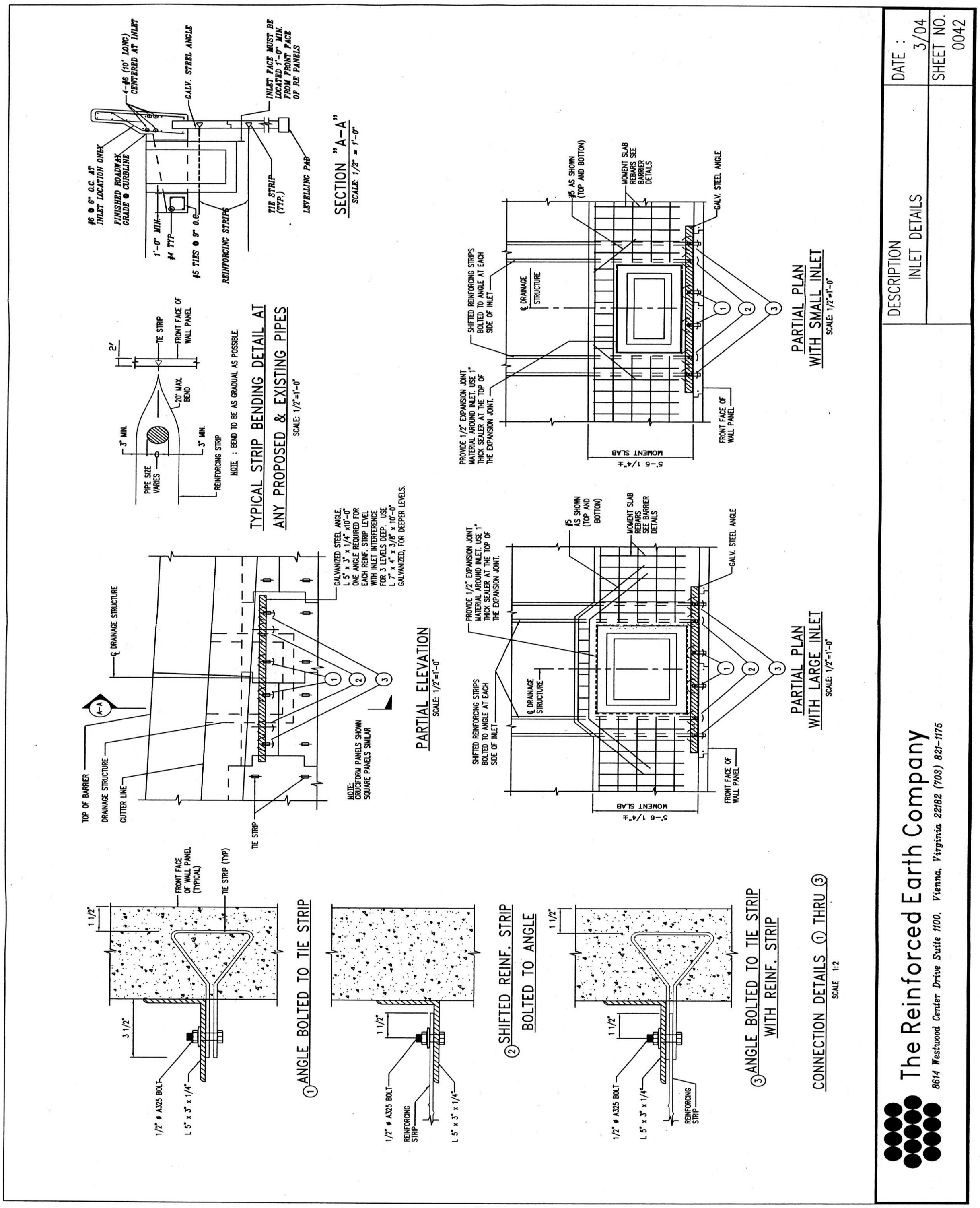
The Reinforced Earth Company 8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175	DESCRIPTION PARTIAL PLAN AT GENERAL OBSTRUCTION	DATE : 3/04 SHEET NO. 0037

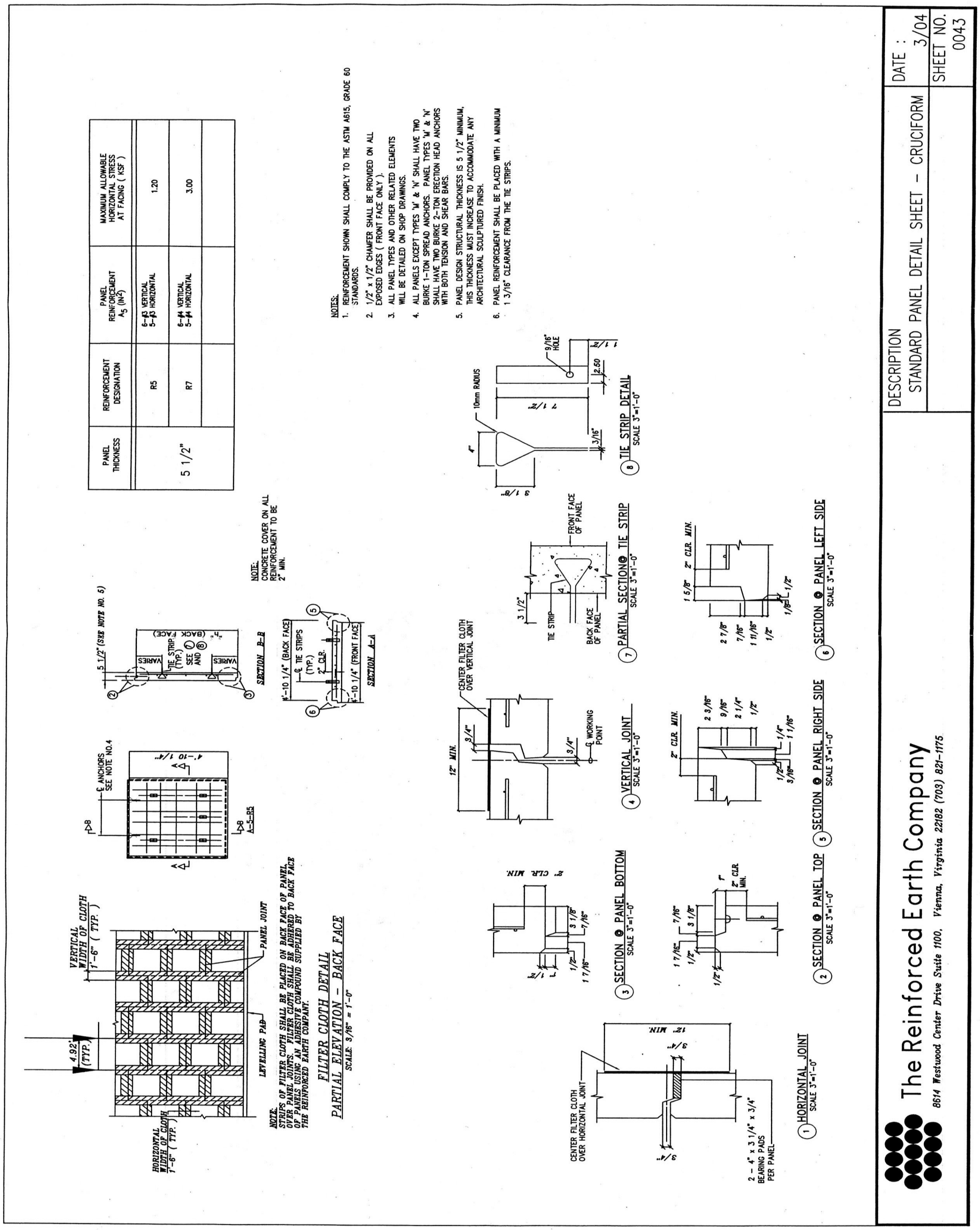

5 1/2"
FRONT FACE OF WALL PANEL
4" MIN.
TROWEL CONCRETE SMOOTH AGAINST FACE OF WALL PANEL AROUND PIPE
1" THICK EXPANSION JOINT MATERIAL BANDED AROUND PIPE AS SHOWN
PLACE 4"x 4" MAXIMUM OPENINGS, GALVANIZED 9 GAGE MINIMUM WIRE 4" MIN.MESH AROUND PIPE AS SHOWN
APPLY BOND BREAKER BETWEEN PRECAST PANELS AND CONCRETE
WRAP AND SECURE FILTER CLOTH AROUND PIPE OVER JOINT PRIOR TO BACKFILLING BEHIND WALL
FORM CONCRETE AROUND PIPE OVER EXP. JT. MAT'L AS SHOWN. ALLOW CONCRETE TO SET PRIOR TO BACKFILLING BEHIND WALL
1
1
1
1
PIPE PENETRATION AT WALL FACE DETAIL
(TREATMENT FOR CONCRETE PIPE SHOWN, CORRUGATED STEEL PIPE SIMILAR)
SCALE: 1" = 1'-0"
The Reinforced Earth Company
DESCRIPTION
PIPE PENETRATION AT WALL FACE
DATE : 3/04
SHEET NO. 0038


PIPE PENETRATION AT WALL
FACE WITH CATCH BASIN DETAIL
SCALE: 1" = 1'-0"
5 1/2"
FRONT FACE OF WALL
FORM OR TROWEL CONCRETE TO MATCH FRONT FACE AND TOP OF WALL PANEL AS SHOWN
PLACE 4"x 4" MAXIMUM OPENINGS, GALVANIZED 9 GAGE MINIMUM WIRE MESH AROUND PIPE AS SHOWN
1" THICK EXPANSION JOINT MATERIAL BANDED AROUND PIPE AS SHOWN
TIE STRIP CAST IN WALL PANEL (TYPICAL)
CONNECTION ANGLE
PLACE FILTER CLOTH OVER JOINT AS SHOWN
4" MIN.
FORM CONCRETE AROUND PIPE OVER EXP. JT. MAT'L AS SHOWN. ALLOW CONCRETE TO SET PRIOR TO BACKFILLING BEHIND WALL
CATCH BASIN
FOOTING
REINFORCING STRIP (TYPICAL)
The Reinforced Earth Company
DESCRIPTION
PIPE PENETRATION AT WALL FACE W/ CATCH BASIN
DATE : 3/04
SHEET NO. 0039


34" – C.I.P. CONC. TRAFFIC BARRIER PARTIAL PLAN
SCALE: 1" = 1'- 0"
B2 #5 @ 12" O.C.
B3 #5 @ 9" O.C.
B4 #6 @ 9" O.C.
CURB LINE
PANEL THROAT
B1 #5 @ 12" O.C.
1:12 SLOPE BARRIER FACE
NOTE: LONGITUDINAL BARS IN BARRIER SECTION NOT SHOWN FOR CLARITY.
ALL LONGITUDINAL BARS ARE #4 AS SHOWN
34" – C.I.P. CONC. TRAFFIC BARRIER DETAIL
SCALE: 1" = 1'- 0"
– ALL LONGITUDINAL BARS ARE #4 AS SHOWN
3/4" CHAMFER (TYP)
10–#4 AS SHOWN UNLESS OTHERWISE NOTED LAP WITH 2'-0" MIN. SPLICE
FINISHED ROWY GRADE AT CURBLINE
PROPOSED FIN. GRADE
B3 #5 @ 9" O.C.
B2 #5 @ 12" O.C.
2'-6" X 2'-10" BLOCKOUT IN CONCRETE FOR CATCH BASIN
1/2" STYROFOAM OR APPROVED COMPRESSIBLE MATERIAL
1/2" EXP. JT. MATERIAL OR APPROVED EQUAL
2– #6 AS SHOWN CONT. W/ 3'–7" MIN. SPLICE
B1 #5 @ 12" O.C.
B4 #6 @ 9" O.C.
2–2" ø RIGS CONDUITS
FRONT FACE OF WALL PANEL AND HORIZ. CONTROL LINE
BAR B1
BAR B2
BAR B3
BAR B4
DESCRIPTION
34" – C.I.P. BARRIER DETAILS
DATE : 3/04
SHEET NO. 0040
The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1775


42" – C.I.P. CONC. TRAFFIC BARRIER DETAIL
SCALE: 1" = 1'-0"
42" – C.I.P. CONC. TRAFFIC BARRIER PARTIAL PLAN
SCALE: 1" = 1'-0"
NOTE: LONGITUDINAL BARS IN BARRIER SECTION NOT SHOWN FOR CLARITY.
ALL LONGITUDINAL BARS ARE #4 AS SHOWN
PANEL THROAT
1:12 SLOPE BARRIER FACE
CURB LINE
PROPOSED FIN. GRADE
FINISHED ROAD GRADE AT CURBLINE
3/4" CHAMFER (TYP)
20-#4 AS SHOWN UNLESS OTHERWISE NOTED CONT. WITH 2'-0" MIN. SPLICE
2-#5 AS SHOWN CONT. W/ 3'-7" MIN. SPLICE
2-2" ø RGS CONDUITS
1/2" STYROFOAM OR APPROVED COMPRESSIBLE MATERIAL
1/2" EXP. JT. MATERIAL OR APPROVED EQUAL
2'-6" X 2'-10" BLOCKOUT IN CONCRETE FOR CATCH BASIN
FRONT FACE OF WALL PANEL AND HORIZ. CONTROL LINE
BAR B1
BAR B2
BAR B3
BAR B4
DESCRIPTION
42" – C.I.P. BARRIER DETAILS
DATE : 3/04
SHEET NO. 0041
The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1775


SECTION "A-A"
TYPICAL STRIP BENDING DETAIL AT ANY PROPOSED & EXISTING PIPES
PARTIAL ELEVATION
PARTIAL PLAN WITH SMALL INLET
PARTIAL PLAN WITH LARGE INLET
ANGLE BOLTED TO TIE STRIP
SHIFTED REINF. STRIP BOLTED TO ANGLE
ANGLE BOLTED TO TIE STRIP WITH REINF. STRIP
CONNECTION DETAILS 1 THRU 3
The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175
DESCRIPTION
INLET DETAILS
DATE :
3/04
SHEET NO.
0042


PANEL THICKNESS
REINFORCEMENT DESIGNATION
PANEL REINFORCEMENT
MAXIMUM ALLOWABLE HORIZONTAL STRESS AT FACING (KSF)
5 1/2"
R5
R7
1.20
3.00
NOTES:
1. REINFORCEMENT SHOWN SHALL COMPLY TO THE ASTM A615, GRADE 60 STANDARDS.
2. 1/2" x 1/2" CHAMFER SHALL BE PROVIDED ON ALL EXPOSED EDGES (FRONT FACE ONLY).
3. ALL PANEL TYPES AND OTHER RELATED ELEMENTS WILL BE DETAILED ON SHOP DRAWINGS.
4. ALL PANELS EXCEPT TYPES 'M' & 'N' SHALL HAVE TWO BURKE 1-TON SPREAD ANCHORS. PANEL TYPES 'M' & 'N' SHALL HAVE TWO BURKE 2-TON ERECTION HEAD ANCHORS WITH BOTH TENSION AND SHEAR BARS.
5. PANEL DESIGN STRUCTURAL THICKNESS IS 5 1/2" MINIMUM, THIS THICKNESS MUST INCREASE TO ACCOMODATE ANY ARCHITECTURAL SCULPTURED FINISH.
6. PANEL REINFORCEMENT SHALL BE PLACED WITH A MINIMUM 1 3/16" CLEARANCE FROM THE TIE STRIPS.
NOTE: CONCRETE COVER ON ALL REINFORCEMENT TO BE 2" MIN.
SECTION B-B
SECTION A-A
FILTER CLOTH DETAIL
PARTIAL ELEVATION – BACK FACE
HORIZONTAL JOINT
SECTION @ PANEL BOTTOM
SECTION @ PANEL TOP
VERTICAL JOINT
SECTION @ PANEL RIGHT SIDE
PARTIAL SECTION @ TIE STRIP
SECTION @ PANEL LEFT SIDE
TIE STRIP DETAIL
The Reinforced Earth Company
8614 Westwood Center Drive Suite 1100, Vienna, Virginia 22182 (703) 821-1175
DESCRIPTION
STANDARD PANEL DETAIL SHEET – CRUCIFORM
DATE : 3/04
SHEET NO. 0043